STATE OF OHIO

COASTAL NONPOINT POLLUTION

CONTROL PROGRAM

ENVIRONMENTAL ASSESSMENT

Office of Ocean and Coastal Resource Management
Coastal Programs Division
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DESIGNATION: Environmental Assessment

TITLE: State of Ohio Coastal Nonpoint Pollution Control Program

ABSTRACT: This environmental assessment is prepared pursuant to the National Environmental Policy Act (NEPA), 42 U.S.C. 4321 et seq. to assess the environmental impacts associated with the approval and implementation of the Coastal Nonpoint Pollution Control Program (coastal nonpoint program) submitted to NOAA and EPA by the state of Ohio. Section 6217 of the Coastal Zone Act Reauthorization Amendments (CZARA), 16 U.S.C. section 1455b, requires states and territories with coastal zone management programs that have received approval under section 306 of the Coastal Zone Management Act to develop and implement coastal nonpoint programs.

For purposes of this environmental assessment, the proposed action is the conditional approval of the Ohio coastal nonpoint program. The Ohio program includes management measures and enforceable policies and mechanisms for wetlands, riparian areas and vegetated treatment systems and for many aspects of the agricultural, urban development, marina, and hydromodification nonpoint source categories.. Ohio requested an exclusion for the forestry source category. NOAA and EPA find that the State has provided sufficient justification for this exclusion. The boundary of the Ohio 6217 management area proposed by Ohio is based on NOAA's recommendation and generally covers the entire Lake Erie watershed.

NOAA and EPA find that the Ohio program meets most of the requirements of section 6217 and will approve the program with conditions. To receive final approval of its program, Ohio will need to meet the conditions which include developing a monitoring plan and completing development of certain aspects of its program addressing agricultural, urban, marina and hydromodification sources.

The conditional approval of the Ohio coastal nonpoint program will not result in any significant environmental impacts different from those analyzed in the Programmatic Environmental Impact Statement prepared for the 6217 program and will have an overall beneficial effect on the environment.

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EXECUTIVE SUMMARY

The National Oceanic and Atmospheric Administration (NOAA) has prepared this environmental assessment to assess the environmental impacts associated with the approval and implementation of the coastal nonpoint pollution control program (coastal nonpoint program) submitted to NOAA and Environmental Protection Agency by the state of Ohio. Section 6217 of the Coastal Zone Act Reauthorization Amendments (CZARA), 16 U.S.C. section 1455b, requires states and territories with coastal zone management programs that have received approval under section 306 of the Coastal Zone Management Act (CZMA) to develop and implement coastal nonpoint programs. These programs were required to be submitted to NOAA and EPA in July 1995. Once approved, these programs will be implemented through changes to the state nonpoint source program approved by EPA under section 319 of the Clean Water Act and through changes to the state coastal zone management program approved by NOAA under the CZMA.

For purposes of this environmental assessment, the proposed action is the conditional approval of the Ohio coastal nonpoint program. The alternatives to the proposed action are to approve the program or to deny approval of the program.

The Ohio program includes management measures and enforceable policies and mechanisms for wetlands, riparian areas and vegetated treatment systems and for many aspects of the agricultural, urban development, marina, and hydromodification nonpoint source categories. The boundary for the Ohio 6217 management area encompasses the Lake Erie watershed area recommended by NOAA and EPA.

NOAA and EPA find that the Ohio program meets many of the requirements of section 6217 and will approve the program with conditions. To receive final approval of its program, Ohio will need to meet the conditions, which include developing a monitoring plan and completing development of certain aspects of its program addressing agricultural, urban, marina, and hydromodification sources..

NOAA and EPA have determined that the conditional approval of the Ohio coastal nonpoint program will not result in any significant environmental impacts different from those analyzed in the Programmatic Environmental Impact Statement prepared for the 6217 program and that this alternative will have an overall beneficial effect on the environment.

1. **OVERVIEW**

1.A Background

In 1990, Congress enacted section 6217 of the Coastal Zone Act Reauthorization Amendments (CZARA), entitled "Protecting Coastal Waters", to help address the problem of nonpoint source pollution and its effect on coastal waters. The purpose of the section is to strengthen the links between Federal and state coastal zone management and water quality programs in order to enhance state and local efforts to manage land use activities that degrade coastal waters and habitats. Section 6217 requires states and territories with federally approved coastal management programs to develop coastal nonpoint pollution control programs (coastal nonpoint programs) and submit them to the National Oceanic and Atmospheric Administration (NOAA) and the Environmental Protection Agency (EPA) in July 1995 for approval. Once approved, these programs will be implemented through changes to the state nonpoint pollution program approved by EPA under section 319 of the Clean Water Act (CWA) and through changes to the state or territorial coastal zone management program approved by NOAA under the CZMA.

Section 6217 utilizes a two-tiered management approach for the control of nonpoint sources of pollution. The purpose of the first tier is to protect coastal waters generally. It requires that states and territories implement, at a minimum, management measures in conformity with guidance (known as the 6217 (g) guidance, or management measure guidance) that was developed by EPA in consultation with NOAA and other Federal agencies. The management measures developed by EPA address the nonpoint pollution source categories of agricultural runoff, urban runoff, forestry runoff, hydromodification, and marinas. Management measures must also be implemented for wetlands protection, riparian areas, and vegetated filter strips. Once the first tier of management measures is implemented to protect coastal waters generally, the state or territory will need to develop additional management measures to apply, as necessary, to meet water quality standards and protect designated uses.

1.B Purpose and Need for Action

In March 1996, NOAA published a programmatic environmental impact statement (PEIS) that assessed the environmental impacts associated with the approval of state and territory coastal nonpoint programs (NOAA, 1996). The PEIS forms the basis for the environmental documents NOAA is preparing on each state and territorial coastal nonpoint program submitted for approval. In the PEIS, NOAA determined that the approval and conditional approval of coastal nonpoint programs will not result in any significant adverse environmental impacts and that these alternatives will have an overall beneficial effect on the environment. The analyses presented in the PEIS are incorporated by reference into this environmental assessment (EA).

NOAA has prepared this EA to assess the environmental impacts associated with the approval and implementation of the coastal nonpoint program submitted to NOAA and EPA by the state of Ohio in September 2000. The Ohio program will be approved after a joint NOAA/EPA review if it meets all of the requirements of section 6217 as specified in the statute

and in the program guidance documents. The analysis in this EA also serves to determine whether the impacts associated with program approval are significantly different from those analyzed in the PEIS, so as to require the preparation of an environmental impact statement (EIS).

In March 1997, NOAA prepared a final environmental impact statement (FEIS) on the Ohio coastal management program submitted for approval under the CZMA (NOAA/Ohio DNR, 1997). The Ohio coastal management program establishes the boundaries of the Ohio coastal area within which the program applies; describes the organizational structure to implement the program; and provides a set of statewide policies applicable to all state and Federal agencies which manage resources along the state's coastline. The information in the FEIS is relevant to this analysis because the section 6217 coastal nonpoint program is to be implemented through the Ohio coastal zone management program, as well as its section 319 Clean Water Act program. Therefore, the Ohio FEIS is incorporated by reference into this EA.

2. **ALTERNATIVES**

For purposes of this environmental assessment, the proposed action is the conditional approval of the Ohio coastal nonpoint pollution control program. The alternatives to the proposed action are to approve the program without conditions or to deny approval of the program. The proposed action, its alternatives, and a summary of their environmental consequences are described below.

2.A Approval of Ohio Coastal Nonpoint Program

To assist states and territories in the development of their coastal nonpoint programs, NOAA and EPA jointly published a guidance document, Program Document and Approval Guidance (NOAA/EPA, 1993). The state and territory programs will be approved after a joint NOAA/EPA review if they meet all of the requirements of section 6217 as specified in the statute and in the program guidance documents. Specifically, the Ohio program must contain the following components:

- o Coordination with Existing State Programs
- o Determination of the 6217 Management Area
- o Implementation of Management Measures in Conformity with (g) Guidance
- o Identification and Implementation of Additional Management Measures
- o Technical Assistance
- o Public Participation
- o Administrative Coordination
- o Identification of Enforceable Policies and Mechanisms

The alternative of approving the Ohio coastal nonpoint program would generally be expected to have a beneficial effect on the environment because the program would help to control sources of nonpoint pollution and would result in fewer pollutants reaching the state's coastal waters. Hydromodification is the single major source of impairment to Ohio streams and rivers, overtaking point sources. Habitat destruction is the number one cause of aquatic life impairment in Ohio streams and rivers, overtaking organic enrichment and dissolved oxygen impacts (Ohio EPA, 1998). The program will help to restore activities in these rivers and streams and other coastal areas which have been adversely affected by human activities. The nonpoint program will also make existing programs more effective by strengthening the link between Federal and Ohio state coastal zone management and water quality programs. In their review of the Ohio program, NOAA and EPA have found that the program does not meet all of the requirements of section 6217. Therefore, full approval of the Ohio coastal nonpoint program is not a feasible alternative. The rationale for this decision is discussed below under the conditional approval alternative. However, as discussed below, the conditional approval alternative is expected to result in the same environmental benefits as the approval alternative, provided Ohio satisfies the conditions.

2.B Conditional Approval of Ohio Coastal Nonpoint Program
[Preferred Alternative]

While NOAA and EPA expect the coastal nonpoint programs submitted for approval to meet all of the requirements of section 6217, NOAA and EPA realize that in some situations, a program may require changes before final approval can be granted. In these situations, NOAA and EPA will grant conditional approval in order to provide states and territories an opportunity to make necessary changes. Conditional approvals are intended primarily to provide additional time to:

(1) address identified gaps, including obtaining new statutory or regulatory authority, if necessary;
(2) demonstrate that existing authorities are adequate for ensuring implementation of the management measures; and,
(3) develop other incomplete program components.

NOAA and EPA will provide up to five years from the time of conditional approval for completion of a coastal nonpoint program. The length of the conditional approval will depend on which program components are subject to conditions and how long it will take to finalize those components.

NOAA and EPA find that the Ohio coastal nonpoint program meets most of the section 6217 requirements and adequately addresses all program components with the exception of the following components. The state will be able to receive final approval of its program by meeting the conditions described below for each component.

(1) *Agriculture*

Ohio's program includes management measures in conformity with the 6217(g) guidance for erosion and sediment control, pesticides, nutrient management, and wastewater and runoff from confined animal feeding operations in its Coastal Nonpoint Pollution Control Program. Ohio's program does not include management measures in conformity with the 6217 (g) guidance for grazing and irrigation waste water. The Ohio program has enforceable policies and mechanisms in place for erosion and sediment control and confined animal feeding operations. The State has identified backup enforceable authorities for the agriculture management measures, but has not yet demonstrated the ability of these authorities to ensure implementation throughout the 6217 management area. In order to receive final approval, the program must meet the following conditions:

! Within two years, Ohio will include in its program management measures in conformity with the agricultural management measures for grazing and irrigation water management. Within one year, Ohio will submit a legal opinion and supporting documentation to demonstrate that back-up authorities can be used as enforceable policies and mechanisms to implement the grazing , irrigation, nutrient, and pesticide management measures throughout the 6217 management area, as described in the *Final Administrative Changes.*

(2) *Urban - New Development, Site Development, Construction Site Erosion and Sediment Control, and Construction Site Chemical Control*

Ohio's program includes management measures in conformity with the 6217(g) guidance for construction site erosion and sediment control, but not for new development, site development and construction site chemical control. The program includes enforceable policies and mechanisms to ensure implementation of the construction site erosion and sediment control management measure. The State has identified backup enforceable authorities for the new and site development management measures, but has not yet demonstrated the ability of these authorities to ensure implementation throughout the 6217 management area. In order to receive final approval, the program must meet the following conditions:

! Within two years, Ohio will include in its program management measures for construction site chemical control, new development and site development in conformity with the 6217(g) guidance. Within one year, Ohio will submit a legal opinion and supporting documentation to demonstrate that back-up authorities can be used as enforceable policies and mechanisms to implement these management measures throughout the 6217 management area.

(3) *Urban - Watershed Protection*

Ohio's program includes a watershed protection management measure in conformity with the 6217(g) guidance for (1) avoiding conversion of areas that are particularly susceptible to erosion and sediment loss and (2) preservation of areas that provide important water quality benefits and/or are necessary to maintain riparian and aquatic biota. However, Ohio's program does not include a management measure that addresses site development to protect the natural integrity of waterbodies and natural drainage systems. The State has identified backup enforceable authorities for the this measure, but has not yet demonstrated the ability of these authorities to ensure implementation throughout the 6217 management area. In order to receive final approval, the program must meet the following conditions:

! Within two years, Ohio will include in its program a management measure to address site development to protect the natural integrity of waterbodies and natural drainage systems in conformity with the 6217(g) guidance. Within one year, Ohio will submit a legal opinion and supporting documentation to demonstrate that back-up authorities can be used as enforceable policies and mechanisms to implement this management measure throughout the 6217 management area.

(4) *Urban - Existing Development*

Ohio's program does not include a management measure for existing development in conformity with the 6217(g) guidance. The State has identified backup enforceable authorities for this measure, but has not yet demonstrated the ability of these authorities to ensure implementation throughout the 6217 management area. In order to receive final approval, the program must meet the following conditions:

! Within two years, Ohio will include in its program a management measure for existing development in conformity with the 6217(g) guidance. Within one year, Ohio will submit a legal opinion and supporting documentation to demonstrate that back-up authorities can be used as enforceable policies and mechanisms to implement this management measure throughout the 6217 management area.

(5) *Urban - New and Existing Onsite Disposal Systems*

The Ohio program includes elements (1), (2), (4) and (5) of the new onsite disposal systems (OSDS) management measure in conformity with the 6217 (g) guidance and enforceable policies and mechanisms for new residential OSDS. However, the Ohio program does not adequately address element (3) of this measure, nor does it have a management measure in conformity with the 6217 (g) guidance or enforceable policies and mechanisms applicable to non-residential OSDS. The Ohio program identifies an authority that may address non-residential OSDS (the Semipublic Sewage System Program), but information on how this program will ensure implementation of the management measures throughout the 6217 management area is needed. In order to receive final approval, the program must meet the following conditions:

! Within two years, Ohio will include in its program management measures for establishing protective setbacks for surface waters, wetlands and floodplains for new OSDS; new nonresidential OSDS; and operating OSDS in conformity with the 6217(g) guidance. Also within two years, Ohio will include enforceable policies and mechanisms to ensure implementation of the management measures for nonresidential new OSDS and existing OSDS throughout the 6217 management area.

(6) *Urban - Roads, Highways, and Bridges*

For State and federal roads, Ohio's program includes management measures in conformity with the 6217(g) guidance and enforceable policies and mechanisms, except the program does not include management measures in conformity with the construction site chemical control, the operation and maintenance, and the runoff systems measures and enforceable policies and mechanisms to implement these measures throughout the 6217 management area. For local roads, highways, and bridges, Ohio's program does not include management measures in conformity with the 6217(g) guidance and enforceable policies and mechanisms to ensure implementation throughout the 6217 management area. In order to receive final approval, the program must meet the following conditions:

! Within two years, Ohio will (1) develop management measures in conformity with the 6217 (g) guidance for construction site chemical control, operation and maintenance, and runoff systems and (2) develop management measures in conformity with the 6217 (g) guidance and enforceable policies and mechanisms for local roads, highways, and bridges throughout the 6217 management area. Within one year, Ohio will submit a legal opinion and supporting documentation to demonstrate that back-up authorities can be used as enforceable policies and mechanisms to implement the construction site chemical control, operation and maintenance, and runoff systems management measures.

(7) *Marinas and Recreational Boating - Siting and Design*

The Ohio program includes management measures in conformity with the 6217(g) guidance for water quality assessment, habitat assessment marina flushing, and sewage facilities. The Ohio program does not include management measures in conformity with the 6217(g) guidance for shoreline stabilization, stormwater runoff, and fueling station design. The program includes enforceable policies and mechanisms to ensure implementation of the water quality assessment, habitat assessment, marina flushing and sewage facilities management measures. The program does not include enforceable policies and mechanisms for shoreline stabilization, stormwater runoff, and fueling station design. The State has identified backup enforceable policies and mechanisms, but has not demonstrated its ability to ensure implementation throughout the 6217 management area. In order to receive final approval, the program must meet the following conditions:

! Within two years, Ohio will include in its program management measures for shoreline stabilization, stormwater runoff, and fueling station design in conformity with the 6217(g) guidance. Within one year, Ohio will submit a legal opinion and supporting documentation to demonstrate that back-up authorities can be used as enforceable policies and mechanisms to implement these management measures throughout the 6217 management area.

(8) *Marinas and Recreational Boating - Operation and Maintenance*

The Ohio program includes management measures in conformity with the 6217(g) guidance for solid waste, liquid material, boat cleaning, public education, maintenance of sewage facilities, and boat operation. The Ohio program does not include management measures in conformity with the 6217(g) guidance for fish waste and petroleum control. The program includes enforceable policies and mechanisms to ensure implementation of the solid waste, liquid material, boat cleaning, maintenance of sewage facilities, and boat operation management measures. The program does not include enforceable policies and mechanisms for the fish waste and petroleum control management measures. The State has identified backup enforceable policies and mechanisms, but has not demonstrated its ability to ensure implementation throughout the 6217 management area. In order to receive final approval, the program must meet the following conditions:

! Within two years, Ohio will include in its program management measures for fish waste and petroleum control in conformity with the 6217(g) guidance. Within one year, Ohio will submit a legal opinion and supporting documentation to demonstrate that back-up authorities can be used as enforceable policies and mechanisms to implement these management measures throughout the 6217 management area. In order to receive final approval, the program must meet the following conditions:

(9) *Hydromodification*

The Ohio program includes management measures in conformity with the 6217(g) guidance for (1) evaluating the potential effects of proposed channelization and channel

modification on physical and chemical characteristics of surface waters in coastal areas (2) plan and design channelization and channel modification to reduce undesirable impacts and (3) erosion and sediment control for dams. The Ohio program does not include management measures in conformity with the 6217(g) guidance for developing an operation and maintenance program for existing modified channels, streambank and shoreline erosion, chemical and pollution control for dams, and protection of surface water quality and instream and riparian habitat for dams. The State has identified backup enforceable policies and mechanisms, but has not demonstrated its ability to ensure implementation throughout the 6217 management area. In order to receive final approval, the program must meet the following conditions:

! Within two years, Ohio will include in its program management measures for developing an operation and maintenance program for existing modified channels, streambank and shoreline erosion, chemical and pollution control for dams, and protection of surface water quality and instream and riparian habitat for dams in conformity with the 6217(g) guidance. Within one year, Ohio will submit a legal opinion and supporting documentation to demonstrate that back-up authorities can be used as enforceable policies and mechanisms to implement the hydromodification management measures throughout the 6217 management area.

(10) Monitoring

Ohio's program does not include a plan to assess over time the success of the management measures in reducing pollution loads and improving water quality. In order to receive final approval, the program must meet the following condition:

! Within one year, Ohio will include in its program a plan that enables the State to assess over time the extent to which implementation of management measures is reducing pollution loads and improving water quality.

The alternative of conditionally approving the Ohio coastal nonpoint program is expected to have the same beneficial results as would full approval and will avoid the adverse impacts associated with denial of approval, provided Ohio satisfies the conditions. The immediate implementation of the completed portions of the program will begin to fulfill the intent of section 6217 by helping to control sources of nonpoint pollution thus resulting in a reduction of pollution reaching coastal waters. Positive socioeconomic benefits will accrue as improvements in coastal water quality resulting from controlling nonpoint pollution increase the aesthetic value of coastal areas thereby benefitting tourism and providing enhanced opportunities for boating and swimming and other water related activities. Improvements in water quality are also likely to improve commercial and recreational fishing. There may be some localized socio-economic impacts from implementation of the management measures because of restrictions that may result from designation of critical coastal areas.

2.C Deny Approval of Ohio Coastal Nonpoint Program [No Action]

The decision to deny approval of a coastal nonpoint program has the same effect as the "no action" alternative under the National Environmental Policy Act. Although section 6217 requires states to develop and implement coastal nonpoint programs, approval of the programs is

not assured until NOAA and EPA find that all the requirements of section 6217 have been met. Denial of approval of a program will have the effect of relying on existing nonpoint control efforts and levying financial penalties on both the state's coastal zone management program under the CZMA and the state's nonpoint pollution program under section 319 of the Clean Water Act. The schedules for such penalties are stipulated in section 6217(c) of the CZARA. The denial of program approval and the imposition of financial penalties may have an adverse environmental effect because it may cause Ohio not to implement management measures that are meant to control coastal nonpoint pollution, restore degraded waters, and protect critical coastal areas.

There are many specific examples of how nonpoint pollution has caused significant water quality problems through the years in Ohio. In the late 1960's, high coliform bacteria counts caused beaches to be closed and more than 1,500 square miles of the Central Basin of Lake Erie to become anoxic (NOAA/Ohio DNR, 1997). The lower Maumee, Black, Cuyahoga and Ashtabula Rivers have been designated Areas of Concern because of the severe water quality problems and the degree of use impairment in each of the four areas. According to Ohio's 1992 Water Quality report to the EPA, 236 miles of Ohio shore are only partially supporting of aquatic life, meaning that at times the water quality fails to meet designated use criteria (Coast Alliance, 1995). Agricultural runoff is responsible for heavy siltation and use impairments in almost 6 miles of Salt Creek in Lorain County and to several miles of Potter Creek in Portage County (Ohio EPA, 1998).

Although the majority of Ohio's coastal waters fully support designated uses, including fishing and swimming, in numerous areas the diversity and health of the aquatic community are disrupted or water quality prevents its use for certain activities. Some of the results include: restrictions on fish consumption; degradation of fish, invertebrate and wildlife populations; eutrophication; restrictions on water consumption and recreational uses, and loss of fish and wildlife habitat.

NOAA and EPA have reviewed the Ohio coastal nonpoint program and found that the program meets most of the requirements of section 6217. Therefore, denying approval of the program is not the preferred alternative.

3. **AFFECTED ENVIRONMENT**

As required by section 6217(a), the geographic scope of each coastal nonpoint program must be sufficient to ensure implementation of management measures to "restore and protect coastal waters." Pursuant to section 6217(e), NOAA, in consultation with EPA, made recommendations to each state and territory on the geographic scope of its program (also known as the "6217 management area"). This recommendation was based on the extent of coastal watersheds in each state and territory. States and territories were not required to adopt NOAA's exact boundary recommendation; they could propose an alternative 6217 management area at the time of program submission.

The boundary of the 6217 management area proposed by Ohio is based on NOAA's recommendation of coastal watershed boundaries and therefore encompasses Ohio's entire Lake Erie watershed.

Because the actual geographic scope of each coastal nonpoint program was unknown during the preparation of the PEIS, that document used NOAA's original recommendation - coastal watersheds - for purposes of generally describing the environment to be affected. The description of the environment in the PEIS was of a general nature because of the widely diverse areas encountered across all of the twenty-nine states and territories that were expected to submit coastal nonpoint programs. The following is a more specific description of the environment in the Ohio 6217 management area, based on the PEIS, the EIS prepared by NOAA during approval of Ohio coastal zone management program, and the Ohio coastal nonpoint program submission.

3.A <u>The Physical Environment</u>

1. The Ohio 6217 Management Area

As stated above, NOAA selected coastal watersheds as its basic recommendation for all state and territory 6217 management areas. After evaluating all coastal watersheds in Ohio for significant indicators of pollution potential, NOAA and EPA recommended to Ohio that a 6217 management area based on watershed boundaries which is necessary "to control sources of pollution that, individually or cumulatively, significantly impact the state's coastal waters". Based on the NOAA/EPA recommendation, the Ohio 6217 management area follows watershed boundaries and its coastal nonpoint pollution control program will therefore be implemented on a watershed basis. Ohio's proposed boundary for the 6217 management area is sufficient to control the land and water uses that have or are reasonably expected to have a significant impact on Ohio's coastal waters. Figure 1 shows Ohio's section 6217 management area.

2. Coastal Environment

Ohio has 262 miles of shoreline along Lake Erie. Ohio's Lake Erie Basin encompasses 11,649 square miles and includes all or portions of 35 counties. Forty-one percent of the state's population lives within this area. The western portion of the coast from Toledo to Huron is characterized by low-relief barrier beaches and numerous reefs, shoals, and rocky islands. This

area is the most productive fish spawning and nursery ground in the Great Lakes and supports a commercial and sportfishing industry. The Lake Erie Western Basin and Sandusky Bay are considered critical spawning habitat for three strains of walleye. The coast from Huron to Conneaut is characterized by moderate-to-high relief shale and/or till slopes and bluffs. Sand beaches were once found along most of Ohio's Lake Erie shoreline. Today they are found in segments totaling about 80 miles of shoreline. The beaches are usually narrow and comprised mostly of sand, although cobble, pocket beaches are also found in rocky areas.

Erosion along the Ohio shore is a serious problem, especially in areas of high bluffs and erodible sand, clay and till. Of the 262 mile shoreline, approximately 157 miles are eroding at a rate greater than 0.3 feet per year. Lake Erie water levels vary naturally over time in cyclical fluctuations. This natural variation results from precipitation and evaporation in the basin, from inflow from the upper Great Lakes through the Detroit River, and outflow into the Niagara River. Lake Erie reached a record high level in June 1986 and has remained about one and one-half feet above its long-term average level. The fluctuating lake levels and development in shoreline areas subject to flooding and erosion has resulted in property losses of as much as $100 million annually.

Approximately 33,000 acres of coastal wetlands in Ohio support at least 250 species of nesting birds and are of immense importance for waterfowl and other migratory species. Sandusky Bay is the most important migration area for black ducks anywhere in North America.

3.B Terrestrial Environment and Land and Water Uses

This section provides a description of the terrestrial environment and the land and water users and uses in the Ohio 6217 management area. The Ohio coastal zone supports extensive and varied commercial and recreational activities. The intensity and nature of land and water uses in many areas has threatened and degraded coastal water quality.

1. Population

The most recent population estimates from the U.S. Census Bureau indicate that the July 1999 estimated population of the 35 counties in Ohio's 6217 management area was 4,901,308 (U.S. Census Bureau, 2000). This represents approximately a 1.5 percent decline in population since 1990. During this time period, population in the two most urban and densely populated counties (Lucas and Cuyahoga) decreased 3.4 and 2.9 percent, respectively. The population of Medina County increased 20.4 percent, the largest increase of all the counties. The counties expected to grow at the fastest rate between 1988 and 2010 are Lorain, Lake, Cuyahoga, and Lucas.

2. Social and Economic Activities

The type and extent of land and water uses in the 6217 management area is an indication of the pollutants entering Ohio coastal waters and the extent to which the environment of the surrounding watershed has been altered. The development of urban, agricultural, and forested

lands and the activities associated with them alter the landscape and generate most of the pollutants entering coastal waters.

a. Agriculture

The combination of climate, soils and topography make Ohio a productive region for agriculture. The growing season extends for as long as 200 days along Lake Erie's shore. Seventy-three percent of the land in the Lake Erie Basin is used for agriculture; intensive row crop agriculture is the dominant land use. According to the Ohio Department of Agriculture's 1997 Annual Report, there are 29,690 farms, with an average size of 211 acres, located in the 35 counties in the Ohio 6217 management area (Ohio CNP, 1999).

The prolonged growing season along Lake Erie and the urbanized character of the region make Ohio's coastal area well suited to the growing of truck produce. The Western Lake Erie watershed contains the largest concentration of specialty crops grown in Ohio and in all of the Great Lakes drainage area. Wheat, oats, corn, soybeans, sugar beets, processing tomatoes, potatoes, cucumbers and other fresh market vegetables are grown (Conservation Reserve Enhancement Program,1999). A variety of fruits, berries, and nursery and greenhouse stock are grown throughout the State. Hogs, sheep, dairy cows and cattle are also raised. Dairy farming is important in Ashtabula County. Nurseries and greenhouses are the most important form of agriculture in Lake County. Grapes and grape products are an important contributor to Ohio's economy. The majority of the State's commercial wineries are located in Lake, Ashtabula, Erie and Ottawa Counties.

b. Forestry

Areas with forest cover and the potential for forest harvesting are fewer in the Lake Erie watershed than in Ohio as a whole. Although 30 percent of Ohio is forested, only 18 percent of the Lake Erie watershed is forested. The northwestern unit of the watershed is 9 percent forested and has an estimated 48,097 thousand board feet of sawtimber removed annually. Most of the heavily forested areas in the Lake Erie watershed are located south and east of Cleveland. This more heavily urbanized and forested northeastern watershed unit is 32 percent forested and has an estimated 113,753 thousand board feet of sawtimber removed annually (Ohio Division of Forestry, 1999). A significant amount of forest removal in the northeastern unit is actually land clearing ahead of a land use conversion from forest to urban. There are 14 sawmills operating in the 6217 management area.

c. Urban

The developed and urban areas account for 4 percent of the land in the Lake Erie Basin. More than 80 percent of Ohio's shoreline is developed, and approximately 2,300 permanent structures are located within 50 feet of the bluff line.

In addition to population data, development activity is also indicative of growth in coastal areas. According to the NOAA report *Building Along America's Coasts, 20 Years of Building Permits, 1970-1989* (NOAA, 1992b), about half of all residential and non-residential construction

in the United States between 1970 and 1989 occurred in coastal areas. During this twenty year period, Ohio issued building permits for 205,596 residential units and 14,492 non-residential units in coastal counties. Cuyahoga and Lucas counties were the leading counties with 75,777 and 44,749 residential and 5,164 and 2,890 non-residential permits issued, respectively.

d. Marinas and Ports

Based on current licensing data, there are a total of 303 licensed marinas in Ohio located on the Lake Erie coastline (Ohio CNP, 1999). These marinas have a total capacity of 37,901 watercraft. Ohio ranks 9th in the United States in the number of boats registered. In 1999, there were 407,347 boats registered in Ohio; an increase of 8,959 boats since 1996 (NMMA, 2000).

Lake Erie provides an efficient and inexpensive means of transporting bulk commodities and is part of the world's busiest waterway system. Ohio has ports at Toledo, Marblehead, Sandusky, Huron, Lorain, Cleveland, Fairport Harbor, Ashtabula, and Conneaut. The ports of Toledo, Cleveland, Lorain, and Ashtabula are four of the 10 busiest ports in the Great Lakes. About 9 million tons of cargo are shipped annually to and from these ports. Port-related activities in Ohio generated 5,000 jobs and $100 million in wages in recent years (Coast Alliance, 1995). Passenger vessels to the Lake Erie Islands are also a part of the maritime industry.

e. Fisheries

The commercial and recreational fisheries of Lake Erie are an important contributor to the state's economy. The peak of commercial Lake Erie harvest most likely occurred in the 1950's, and has been in decline since. There were 53 commercial fishing vessels operating in Ohio in 1990. Commercial fish landings for the years 1996 to 2000 showed yearly fluctuations. Landings increased slightly from 4.3 million pounds in 1996 to a high of 4.7 million pounds in 1998. Landings then decreased to 3.5 million pounds in 2000 (NOAA, 2001). Recreational fishermen generate approximately $243 million annually. Yellow perch, walleye, small-mouth bass and white bass are the most sought after recreational fishing species. Charter boat fishing is also an important economic activity. Other important species of fish caught in Ohio include white perch, bluegills, crappie, channel catfish, inland trout, northern pike, lake trout, Great Lakes salmon, and muskellunge.

f. Recreation and Tourism

The Lake Erie coastal area provides excellent opportunities for outdoor recreation and tourism. The Lake Erie recreation industry generates $8.5 billion per year and supports both directly and indirectly over 152,000 jobs (Coast Alliance, 1995). Recreational areas include managed wildlife areas, state parks, natural areas, marinas, beaches, fishing access sites, hunting access areas, and public boat launch sites.

Table 1. Lake Erie Recreational Facilities (NOAA/Ohio DNR, 1997; Ohio CNP, 1999)

	Number	Shoreline Frontage (miles)
State Parks	7	15
Natural Areas	6	2
Marinas	303	
Managed Wildlife Areas	13	6 (state)
Fishing Access Sites	54	
Public Boat Launch Sites	27	
Hunting Access Areas	15	
Beaches	33	

The lakeshore counties of Lorain, Erie and Ottawa attract six to eight million visitors annually. The popular Lake Erie Islands of Kelleys Island, South Bass Island, and Catawba Island are serviced by passenger vessels.

Old Woman Creek State Nature preserve, near Huron, offers compatible public uses, such as hiking and nature observation. Old Woman Creek is also a National Estuarine Research Reserve where scientific research and education is being conducted.

g. Minerals Extraction

Abundant salt, sand, gravel, limestone, and gypsum deposits make Ohio a major mineral producer. Over 2 million tons of salt are produced yearly from a mine beneath Lake Erie.

4. **ENVIRONMENTAL CONSEQUENCES**

Management measures are defined in section 6217 as economically achievable measures to control the addition of pollution to coastal waters, which reflect the greatest degree of pollutant reduction achievable through the application of the best available nonpoint pollution control practices, technologies, processes, siting criteria, operating methods, or other alternatives. As required by the statute, EPA developed guidance (USEPA, 1993) specifying management measures for the following nonpoint pollution source categories: agricultural runoff, urban runoff, forestry runoff, marinas, hydromodification, and wetlands, riparian areas, and vegetated treatment systems. Coastal nonpoint programs must provide for the implementation of management measures that are in conformity with this guidance. The guidance also lists and describes management practices that EPA has found to be representative of the types of practices that can be applied successfully to achieve the management measures. State and territory programs are not required to specify practices, but must include a process for selection of practices that will achieve the measures.

NOAA's PEIS discussed the fifty-six management measures specified in the EPA guidance and their function in preventing the environmental degradation caused by the pollutants associated with each nonpoint source category. Each coastal nonpoint program must address each of the management measures by either: (1) providing for the implementation of that measure or an alternative as effective; or (2) justifying why the management measure is not included in the program. States and territories may exclude nonpoint source categories or subcategories where the sources do not exist or do not, individually or cumulatively, present significant impacts to coastal waters.

4.A MANAGEMENT MEASURES IMPLEMENTATION

1. ENVIRONMENTAL IMPACTS

With the exceptions noted below, the Ohio coastal nonpoint program provides for the implementation of management measures for agriculture, urban, marina, and hydromodification nonpoint source categories, and for wetlands, riparian areas, and vegetated treatment systems. Ohio has presented sufficient justification for exclusion of the forestry source category from their program. The full text of all management measures and a statement of their applicability can be found in Appendix A.

a. **Agricultural Nonpoint Pollution Source Category**

Agriculture is a major source of nonpoint source pollution in the Ohio 6217 management area. The amounts of nitrogen and phosphorous fertilizers, herbicides, insecticides and sediment discharged from streams in the Lake Erie basin are higher than from those in any other basin of the Great Lakes (Ohio CNP, 1999). The Ohio 305(b) Water Quality Assessment Report (Ohio EPA, 1998) lists agriculture as the third leading source of aquatic life use impairment in the State's streams and rivers. Organic enrichment, siltation and nutrient transport - all of which can

result from agricultural activities - are listed as the second, third, and sixth leading causes, respectively, of aquatic life use impairment. The report also lists agricultural activities as a major source of impairment of aquatic life uses in 549 miles of the State's streams and rivers; as a moderate source of impairment in 446 miles; and a minor source of impairment in 124 miles of rivers and streams. Nutrients are listed as a major cause of impairment to 305 miles of rivers and streams and as a moderate cause of impairment to 315 miles. Pesticides are listed as a major cause of impairment to 16 miles of rivers and streams and as a moderate cause of impairment to 87 miles.

The Ohio 305(b) Water Quality Assessment Report also states that nonirrigated crop production is a source of silt to about 10 miles of the Little Sandusky River and is a major cause of use impairment to its waters. Nonirrigated crop production is also a source of excess nutrients to the entire Maumee River mainstem in Lucas County. Cattle grazing in the pasture- land along Gries Ditch in Sandusky County causes heavy nutrient enrichment to 12 miles of stream waters.

Management measures for the following five subcategories of sources of agricultural nonpoint pollution that affect Ohio's waters will be implemented as part of the State's coastal nonpoint program:

- Erosion and sediment control
- Confined animal facilities
- The application of nutrients
- The application of pesticides
- Grazing management
- Irrigation water management

The implementation of agricultural management measures will reduce the generation of nonpoint source pollutants from agricultural activities and minimize the delivery of pollutants from agricultural lands to surface and ground waters. Agricultural management measures emphasize the control and removal of the sediment, nutrients, and pesticides entrained in runoff before they enter coastal waters. The management measures for confined animal facilities are intended to eliminate the pollutants leaving a facility by storing runoff and reducing the amount of facility wastewater and manure reaching a waterbody. The nutrient and pesticide management measures will promote a more efficient use of fertilizers and pesticides by limiting the amount of nitrogen, phosphorus, and chemicals applied to agricultural lands thereby reducing their runoff and leaching into surface and ground waters. Management measures for grazing will protect sensitive areas such as streambanks and wetlands from damage by grazing of domestic livestock. This will improve aquatic habitat.

The implementation of management measures for agricultural nonpoint pollution, based on the existing State programs and authorities discussed below, will result in broader, more widespread implementation of the management measures with the resulting environmental benefits associated with a reduction in agricultural nonpoint pollution.

The Environmental Consequences section of the PEIS contains a description of the primary pollutants in agricultural runoff and an analysis of the impacts of these pollutants on

water quality. The management measures are designed to prevent the environmental degradation caused by these pollutants.

Management Measures for Agricultural Sources

Ohio's Coastal Nonpoint Pollution Control Program includes management measures in conformity with the 6217 (g) guidance for erosion and sediment control, pesticides, nutrients and wastewater and runoff from confined animal feeding operations. These management measures are addressed primarily through Ohio's Agricultural Pollution Abatement Program and Pesticide Program, among other programs. Best Management Practices (BMPs) the State will use to implement the agricultural management measures are described in the *Ohio Livestock Manure and Wastewater Management Guide* and the *USDA Field Office Technical Guide.*

Ohio relies heavily on voluntary and incentive-based programs to encourage management measure implementation, such as the Western Lake Erie Watershed Conservation Reserve Enhancement Program, the Groundwater Protection and Management Strategy and the Source Water Protection Programs, as well as numerous technical and financial assistance programs.

In order for the agricultural management measures to be approved, the State must meet the following conditions:

Conditions

• Within two years, Ohio will include in its program management measures in conformity with the agricultural management measures for grazing and irrigation water management. Within one year, Ohio will submit a legal opinion and supporting documentation to demonstrate that back-up authorities can be used as enforceable policies and mechanisms to implement the grazing, irrigation, nutrient, and pesticide management measures throughout the 6217 management area, as described in the *Final Administrative Changes* (see Section XIII.)

1. ***Erosion and Sediment Control Management Measure***

This management measure is intended to be applied to activities that cause erosion on agricultural lands and lands converted from other uses to agricultural lands. The problems associated with soil erosion are the movement of sediment and associated pollutants by runoff into a waterbody. Application of this management measure will reduce the mass load of sediment and pollutants such as nitrogen and pesticides reaching coastal waters.

Ohio intends to rely on the following authorities and programs for implementation of the erosion and sediment control management measure:

• The Ohio program requires erosion and sediment control measures under the Ohio Agricultural Pollution Abatement Program. The program is administered by the Ohio Department of Natural Resources (ODNR) in cooperation with the Soil and Water Conservation Districts (SWCDs). The program includes the erosion control specifications set forth in the *USDA Field Office Technical Guide*. In addition, rules for the Ohio Agricultural Abatement Program mandate that soil erosion from wind erosion be equal or less than permissible soil loss values related to the specific soil series as specified in the *USDA Field Office Technical Guide*.

2. ***Management Measure for Facility Wastewater and Runoff from Confined Animal Facility Management (Large and Small Units)***.

These management measures are intended to be applied to confined animal facilities. Application of these measures will reduce the volume of runoff, manure, and facility wastewater reaching a waterbody. The problems associated with large and small unit animal facilities are the same. Both management measures are or will be implemented by the same state programs. The management measure reduces the amount of pollutants leaving a facility by using practices that reduce the amount of water that comes in contact with animal waste materials.

Ohio intends to rely on the following authorities and programs for implementation of the facility wastewater and confined animal facilities management measures:

• Ohio has authority over livestock operations through the Ohio Agricultural Pollution Abatement Program administered by the ODNR and SWCDs. This program applies to all animal feedlots and animal waste management facilities and land application areas for managing and disposal of animal wastes and requires operators to construct, operate and maintain settling, grass filtration, or soil infiltration systems in accordance with the *Ohio Livestock Manure and Management Guide* and or the *USDA Field Office Technical Guide*. Both of these guides address the structure requirements for confined animal facilities described in the 6217(g) guidance**.** The *Ohio Livestock Manure and Wastewater Management Guide* also describes design options for waste utilization systems. The program submittal notes that a National Pollution Discharge Elimination System (NPDES) permit is required for animal operations above 300 animal units that convey a controlled, direct discharge to waters of the state. Confined animal feeding operations that are covered by the NPDES permit are considered exempt from the requirements of these management measures.

3. ***Nutrient Management Measure***

This management measure is intended to be applied to activities associated with the application of nutrients to agricultural lands. The problems associated with this activity include the entrance of nutrients into ground and surface waters and the degradation of water quality. The goal is to minimize edge-of-field delivery of nutrients and the leaching of nutrients from the root zone. This measure will reduce the amount of nutrients entering both ground and surface waters and promote more efficient use of all sources of nutrients available to the producer.

Subject to the condition noted above, Ohio intends to rely on the following authorities and programs for implementation of the nutrient management measure:

• Nutrient management plans are required of animal feeding operations with more than 1000 animal units under Ohio's Water Pollution Control Laws. Smaller confined animal feeding operations and other types of farms are not required to have nutrient management plans. The Agricultural Pollution Abatement Program also includes provisions regarding the management of nutrients from animal waste and provides cost share funds to assist landowners in implementing BMPs. The Ground Water and Source Water Protection Programs provide authority to municipalities to protect their sources of drinking water by requiring controls of pollution sources.

Ohio also has a voluntary Precision Agriculture and Manure Nutrient Management Plan Program that provides technical assistance and education to producers about proper nutrient management.

4.***Pesticide Management Measure***

This management measure is intended to be applied to activities associated with the application of pesticides to agricultural lands. The problems associated with this activity are caused by the runoff and leaching of pesticides into surface and ground waters and its adverse effect on the biota and water quality. This measure will reduce contamination of surface and ground water by fostering effective and safe use of pesticides without causing environmental degradation.

Subject to the condition noted above, Ohio intends to rely on the following authorities and programs for implementation of the pesticide management measure:

• The Ohio Department of Agriculture (ODA) sets regulatory standards for the use, storage, and handling of pesticides, however it is not clear if these standards address all components of the management measure. ODA also has a pesticide applicator licensing certification program. Ohio also has voluntary Integrated Pest and Crop Management Programs that provide education and technical assistance to landowners to implement BMPs for proper pesticide use.

5. ***Grazing Management Measure***

This management measure is intended to be applied to activities on range, irrigated and nonirrigated pasture, and other grazing lands used by domestic livestock. Its focus is on the riparian zone, but this measure also encourages the control of erosion from range, pasture, and other grazing lands above the riparian zone. The problems associated with grazing are the physical disturbance of sensitive areas and the runoff of sediment, animal wastes, nutrients, and chemicals to surface waters. Application of this management measure will improve aquatic habitat by reducing the amount of pollutants entering waters through proper livestock management.

Ohio intends to rely on the following authorities and programs for implementation of the grazing management measure:

• The State may be able to address erosion control problems from grazing through the authority of the Ohio Agricultural Pollution Abatement Program. However, the State needs to provide additional information to determine if grazing is included in the Agricultural Pollution Abatement Program and how the enforceable policies of the program apply. Ohio will also rely on backup authorities through the Water Quality Pollution Control Laws and Water Quality Rules authority under the Stream Litter Law.

5. ***Irrigation Management Measure***

This management measure is intended to be applied to activities on irrigated lands,

including agricultural crop and pasture land (except for isolated fields of less than 10 acres in size that are not contiguous to other irrigated lands); orchard land; specialty cropland; and nursery cropland. Application of this management measure will reduce the waste of irrigation water, improve water use efficiency, and reduce the total pollutant discharge from an irrigation system.

Subject to the conditions noted above, Ohio intends to rely on the following authorities and programs for implementation of the irrigation management measure:

• The program submittal notes that there is limited irrigation in the management area at this time but the possibility for increased irrigation in the future exists. The only program cited in the program specifically related to irrigation is a demonstration project implementing Wetland Reservoir Sub-Irrigation Systems in the Maumee River Watershed.

b. **Urban Nonpoint Pollution Source Category**

In Ohio, the major change in land use over the past 20 years has been the conversion of farmland and woodlands to industrial and residential uses. In the Lake Erie Basin, industrial, commercial, residential, quarries, transportation and institutional uses comprise over 4 percent of total land use. The spread of urban land uses is greatest in the Cleveland and Toledo metropolitan areas with urban land uses comprising over 16 percent of land uses in the Cuyahoga River Basin and over 14 percent in the Rocky River Basin (Ohio CNP, 1999).

The most recent population estimates indicate that there has been approximately a 1.5 percent decline in population in the 35 counties in Ohio's 6217 management area since 1990 (U.S. Census Bureau, 2000). During this time period, population in the two most urban and densely populated counties (Lucas and Cuyahoga) decreased 3.4 and 2.9 percent, respectively, while the population of Medina County increased 20.4 percent, the largest increase of all the counties. The counties expected to grow at the fastest rate between 1988 and 2010 are Lorain, Lake, Cuyahoga, and Lucas.

The Ohio 305(b) Water Quality Assessment Report (Ohio EPA, 1998) states that urban runoff is a known source of pollution in Big Creek and Mill Creek in Cuyahoga County and in segments of the Cuyahoga River in Cuyahoga and Summit Counties. Septic systems are listed as sources of contamination that cause use impairments in Raccoon Creek and Gries Ditch in Sandusky County, Arcola Creek in Astabula County, and the Chagrin River in Cuyahoga County. Suburbanization/land development, construction, and highway maintenance and runoff are all listed as sources of pollutants to many of Ohio's rivers and streams, including Linton Creek, McFarland Creek, and the Chagrin River in Cuyahoga County.

Management measures have been developed for the following six subcategories of sources of urban nonpoint pollution that affect coastal waters:

- o Runoff from developing areas
- o Runoff from construction sites
- o Runoff from existing development
- o On-site disposal systems
- o General sources (households, commercial, and landscaping)
- o Roads, highways, and bridges

The Environmental Consequences section of the PEIS contains a description of the primary pollutants in urban runoff and an analysis of the impacts on water quality. The management measures are designed to prevent the environmental degradation caused by these pollutants.

The implementation of management measures for urban runoff will reduce the generation of nonpoint source pollutants from existing development and control runoff and treat pollutants associated with new development and redevelopment. The measures emphasize the control and removal of sediment and other suspended solids and pollutants entrained in runoff. The measures will minimize the transport of sediment and other pollutants (pesticides, fertilizers, petrochemicals, road salt, wood, garbage, paints and sealers) from new and existing development. The management measures pertaining to new and existing OSDS will reduce nutrient and pathogen loadings by: preventing the installation of conventional OSDS in areas where soil absorption systems will not provide adequate treatment of effluents; and, requiring that existing OSDS be modified, operated, repaired, and maintained to reduce pollutant loadings. The measures will require that roads, highways, and bridges are sited, constructed, operated, and maintained in order to protect sensitive ecosystems and reduce the generation and runoff of sediment, road salt, and other pollutants.

The environmental benefits that result from the implementation of management measures for urban runoff using existing Ohio programs and authorities will be enhanced by the requirement for the State to include in its program a management measure to address site development to protect the natural integrity of waterbodies and natural drainage systems. Increased environmental protection will result from the requirement to establish protective setbacks for surface waters, floodplains, and wetlands for new Onsite Disposal Systems.

Management Measures for Urban Areas

1. *New Development, Site Development, Construction Site Erosion and Sediment Control, and Construction Site Chemical Control Management Measures*

The New Development management measure is intended to be applied to control urban runoff and treat associated pollutants generated from new development, redevelopment, and new and relocated roads, highways, and bridges. The net result of this management measure will be increased watershed protection and a reduction in the erosion, flooding, and pollutants associated with poorly planned development.

The Site Development management measure is intended to be applied to all site development activities including those associated with roads, highways, and bridges. Application of this management measure will reduce the generation of nonpoint source pollution and mitigate the impacts of urban runoff through proper design and development of individual sites.

The Construction Site Erosion and Sediment Control management measure is intended to be applied to all construction activities on sites less than five acres in areas that do not have an NPDES permit in order to control erosion and sediment loss from those sites. This measure does

not apply to: (1) construction of a detached single family home on a site of one-half acre or more or (2) construction that does not disturb over 5,000 square feet of land on a site. Application of this management measure will minimize the sediment being transported outside the perimeter of a construction site by reducing erosion and retaining sediment onsite.

The Construction Site Chemical Control management measure is intended to be applied to all construction sites less than five acres in area and to new, resurfaced, restored, and reconstructed road, highway, and bridge construction projects. This management measure does not apply to: (1) construction of a detached single family home on a site of one-half acre or more or (2) construction that does not disturb over 5,000 square feet of land on a site. Application of this management measure will prevent the generation of these pollutants at construction sites due to improper handling and usage, and prevent their movement from the construction site.

Subject to the conditions noted, Ohio intends to rely on the following authorities and programs for implementation of these four management measures:

• The NPDES Storm Water Phase I and II programs will be sufficient to meet the Construction Erosion and Sediment Control management measure.

• Ohio's Water Quality Standards and the Stream Litter Law and the authority local governments have to regulate stormwater and land development through local ordinances, resolutions, or zoning resolutions.

• Voluntary and incentive-based technical assistance programs such as the Nonpoint Education for Municipal Officials (NEMO) program can implement these management measures.

• The guidelines for stormwater management (*Rainwater and Land Development*, 1996) may meet the new development and site development management measures. The guidelines describe general pollution prevention practices to be followed at all construction sites.

• The Ohio EPA will use Clean Water Act to enforce water quality standards and the Resource Conservation and Recovery Act to regulate toxic and hazardous substances.

• The Pesticide Licensing and Registration Program will be used to regulate pesticide use.

Conditions

• Within two years, Ohio will include in its program management measures for new and site development and construction site chemical control in conformity with the 6217(g) guidance. Within one year, Ohio will submit a legal opinion and supporting documentation to demonstrate that back-up authorities can be used as enforceable policies and mechanisms to implement these management measures throughout the 6217 management area, as described in the *Final Administrative Changes* (see Section XIII.)**.**

2. ***Watershed Protection Management Measure***

The Watershed Protection management measure is intended to be applied to new development or redevelopment including construction of new and relocated roads, highways, and bridges that generate nonpoint source pollutants. Application of this management measure will reduce the generation of nonpoint source pollutants and mitigate the impacts of urban runoff.

Subject to the conditions noted, Ohio intends to rely on the following authorities and programs for implementation of the Watershed Protection management measure:

• Voluntary programs and funding mechanisms, such as the Lake Erie Protection Fund which provides grants for water quality protection projects, and the Department of Natural Resources Natureworks Streambanking program, which can protect and establish stream buffers. The Urban Streams Program provides funding for Urban Stream Specialists to provide technical assistance in the implementation of watershed management plans in targeted watersheds. The Remedial Action Planning process is used in 4 Areas of Concern designated within the Lake Erie Basin to address water quality impairments. Ohio's Regional Watershed Planning approach also appears to be very promising in implementing this management measure. Ohio EPA is directing that all watershed-based projects use its *Guide to Developing Watershed Action Plans in Ohio* to develop watershed planning projects.

Conditions

Within two years, Ohio will include in its program a management measure to address site development to protect the natural integrity of waterbodies and natural drainage systems in conformity with the 6217(g) guidance. Within one year, Ohio will submit a legal opinion and supporting documentation to demonstrate that back-up authorities can be used as enforceable policies and mechanisms to implement this management measure throughout the 6217 management area, as described in the *Final Administrative Changes* (see Section XIII.)

3. ***Existing Development Management Measure***

This management measure is intended to be applied to all urban areas and existing development in order to reduce surface water runoff pollutant loadings from such areas. Application of this management measure will protect or improve surface water quality by developing and implementing watershed management programs.

Subject to the conditions noted, Ohio intends to rely on the following authorities and programs for implementation of the Existing Development management measure:

• Voluntary and incentive-based programs such as the Remedial Action Planning process provides partial coverage for four Lake Erie Areas of Concern. The Ohio Coastal Management Enhancement Program appears to partially meet the management measure by identifying priority projects to reduce nonpoint source pollution using a systematic approach. The Urban Streams Program may also engage in similar work and strategies. The Natureworks program provides funding for buffer establishment for restoration and protection.

Conditions

Within two years, Ohio will include in its program a management measure for existing development in conformity with the 6217(g) guidance. Within one year, Ohio will submit a legal opinion and supporting documentation to demonstrate that back-up authorities can be used as enforceable policies and mechanisms to implement this management measure throughout the 6217 management area, as described in the *Final Administrative Changes* (see Section XIII.)

4. ***New and Operating Onsite Disposal Systems Management Measures***

These management measures are intended to be applied to all new and all operating OSDS including package plants and small-scale or regional treatment facilities not covered by NPDES regulations in order to manage the siting, design, installation, and operation and maintenance of all such OSDS. Application of this management measure will prevent the installation of conventional OSDS in areas where soil absorption systems will not provide adequate treatment of effluents containing solids, phosphorus, pathogens, and nitrogen, prior to entry into surface or ground waters. Application of this management measure will also minimize pollutant loadings from operating OSDS by requiring that they be modified, operated, repaired, and maintained to reduce nutrient and pathogen loadings in order to protect and enhance surface waters.

Subject to the conditions noted, Ohio intends to rely on the following authorities and programs for implementation of the OSDS management measures:

• The Household Sewage Disposal Rules provide adequate enforceable policies and mechanisms to control nonpoint pollution from new residential OSDS for elements (1), (2), (4) and (5) of this management measure.

• The Phosphorus Reduction Strategy reduces phosphorus loadings to OSDS in all counties in the Lake Erie watershed by prohibiting sales and distribution of household laundry detergent containing greater than 0 .5 percent by weight phosphorus.

• The Semipublic Sewage System Program has the authority to regulate new and existing semipublic OSDS, including conducting maintenance and inspection surveys and taking limited enforcement actions for non-compliance.

Conditions

Within two years, Ohio will include in its program management measures for establishing protective setbacks for surface waters, wetlands and floodplains for new OSDS; new nonresidential OSDS; and operating OSDS in conformity with the 6217(g) guidance. Also within two years, Ohio will include enforceable policies and mechanisms to ensure implementation of the management measures for nonresidential new OSDS and existing OSDS throughout the 6217 management area.

5. ***Pollution Prevention Management Measure***

This management measure is intended to be applied to reduce the generation of nonpoint source pollution in all areas within the section 6217 management area. It is meant to prevent and reduce pollutant loadings generated from a variety of activities within urban areas not addressed by other management measures in this source category. It is meant to ensure that communities implement solutions that may result in behavioral changes that reduce the generation of pollutants, thus reducing water quality impacts from these sources.

This management measure does not require enforceable policies. Ohio has a number of programs that address all of the elements of the management measure. The Ohio EPA has established an Office of Pollution Prevention which focuses on developing initiatives that focus on industrial and commercial entities incorporating pollution prevention into Ohio EPA's regulatory

activities. The Solid Waste Management Districts provide valuable and useful programs at the local level to promote proper separation and disposal of household hazardous wastes, yard wastes and pet wastes. Ohio's watershed programs also focus on pollution prevention through technical and financial assistance.

*6. **Management Measure for Planning, Siting, and Developing Roads and Highways***

The management measure for Planning, Siting, and Developing is intended to be applied to site development and land disturbing activities for new, relocated, and reconstructed roads and highways in order to reduce the generation of nonpoint source pollutants and to mitigate the impacts of urban runoff from such activities. This measure emphasizes the importance of planning to identify potential problems early in the design process.

The management measure for Bridges is intended to be applied to new, relocated, and rehabilitated bridge structures in order to control erosion, stream bed scouring, and surface runoff from such activities. This will ensure that bridges will not be sited over sensitive waters and tributaries in the coastal zone.

The management measure for Construction Projects is intended to be applied to new, replaced, restored, and rehabilitated road, highway, and bridge construction projects in order to control erosion and offsite movement of sediment from such project sites. This measure emphasizes the importance of erosion and sediment control plans as effective methods in mitigating erosion problems at construction sites before any land-disturbing activity begins.

The management measure for Construction Site Chemical Control is intended to be applied to new, resurfaced, restored, and rehabilitated road, highway, and bridge construction projects in order to reduce toxic and nutrient loadings from such project sites. The objective of this measure is to safeguard surface and ground waters from toxic spills and hazardous loadings at construction sites from equipment and fuel storage, and also from road salt, fertilizers, and pesticides stored at maintenance areas.

The management measure for Operation and Maintenance is intended to be applied to existing, restored, and rehabilitated roads, highways, and bridges. This measure will ensure that pollutants generated by operation and maintenance procedures for roads, highways, and bridges, and from sparsely vegetated areas, cracked pavements, potholes, and poorly operating urban runoff control structures, are minimized through the development and implementation of a program that includes standard operating procedures and maintenance guidelines.

The management measure for Road, Highway, and Bridge Runoff Systems is intended to be applied to existing, resurfaced, restored, and rehabilitated roads, highways, and bridges that contribute to adverse impacts to surface waters. Surface waters will be protected through the use of runoff management systems such as vegetated filter strips, grassed swales, detention basins, constructed wetlands, and infiltration trenches.

Subject to the conditions noted, Ohio intends to rely on the following authorities and programs for implementation of the roads, highways and bridges management measures:

• The Ohio Department of Transportation (ODOT) maintains standards for the construction and maintenance of state-owned and federally funded highway and bridge projects. Activities relating to the construction of roads, highways, and bridges are permitted under the NPDES storm water program. ODOT's Handbook for Erosion and Sediment Control set forth erosion and sediment control goals and BMPs for new transportation and construction projects. ODNR approval is required for ODOT projects, including bridges within 1000 feet of scenic rivers (but only outside of municipalities).

• For construction site chemical control, Ohio's program relies primarily on enforcement of Clean Water Act water quality standards, the Pesticide Licensing and Registration Program administered by the Ohio Department of Agriculture and the State's Stream Litter Law, which prohibits stream litter or other discharges that kill or endanger wild animals and stream life.

• The NPDES permit does not require additional operation and maintenance procedures for roads, highways, and bridges.

Conditions

Within two years, Ohio will (1) develop management measures in conformity with the 6217 (g) guidance for construction site chemical control, operation and maintenance, and runoff systems and (2) develop management measures in conformity with the 6217 (g) guidance and enforceable policies and mechanisms for local roads, highways, and bridges throughout the 6217 management area. Within one year, Ohio will submit a legal opinion and supporting documentation to demonstrate that back-up authorities can be used as enforceable policies and mechanisms to implement the construction site chemical control, operation and maintenance, and runoff systems management measures, as described in the *Final Administrative Changes* (see Section XIII.)

c. **Forestry Nonpoint Pollution Source Category**

Ohio has presented sufficient justification to support a categorical exclusion for forestry from its coastal nonpoint program. Ohio's program submittal indicates that nonpoint sources of pollution from forestry do not and are not reasonably expected to present significant adverse effects to living coastal resources or human health in Ohio.

The Ohio Environmental Protection Agency's 303(d) report (Ohio EPA, 1998a) shows that all of the impaired water body segments in the Lake Erie watershed are located upstream of small lakes, it is apparent that the trapping efficiencies of these lakes would negate most of the effects of forestry-induced impairment on coastal waters. Ohio's data also suggests that sediment loads from forested areas are not excessive, and that sediment loads that are present are highly correlated with stream channel and bed movements rather than upland land use practices. Furthermore, it appears that a relatively small number of pollution complaints to ODNR were related to forestry activities. Finally, land use data for the watershed further reinforce the trend toward decreasing levels of large-scale silvicultural activity within the 6217 management area in the future. The level of milling activity in the Lake Erie watershed is also relatively low. Therefore, the State has provided sufficient evidence that forestry related activities do not present a significant threat to coastal resources.

d. **Marinas and Recreational Boating Nonpoint Pollution Source Category**

There are 303 licensed marinas in Ohio on the Lake Erie coastline with a total capacity of 37,901 watercraft (Ohio CNP, 1999). In 1999, there were 407,347 boats registered in Ohio; an increase of 8,959 boats since 1996 (NMMA, 2000).

The Ohio 305(b) Water Quality Assessment Report (Ohio EPA, 1998) states that marina construction contributes to the widespread habitat destruction occurring in the estuary portion of the Chagrin River (East Branch to Lake Erie) in Lake County. Marinas are also listed as a moderate source of use impairment to the Ashtabula River in Ashtabula County.

Management measures have been developed for the following five subcategories of sources of nonpoint pollution from marinas and recreational boating that affect coastal waters:

- Poorly flushed waterways where dissolved oxygen deficiencies exist,
- Pollutants discharged from boats,
- Pollutants transported in storm water runoff from parking lots, roofs, and other impervious surfaces,
- The physical alteration or destruction of wetlands and of shellfish and other bottom communities during the construction of marinas, ramps, and related facilities, and
- Pollutants generated from boat maintenance activities on land and in the water

Fifteen management measures specified for this source category are grouped under two broad headings: (1) siting and design, and (2) operation and maintenance. Effective implementation of these measures will avoid impacts associated with marina siting and prevent the introduction of nonpoint source pollutants.

The six main pollutant types associated with marina and boating activities that affect water quality include: toxicity in the water column; increased pollutant levels in aquatic organisms; increased pollutant levels in sediments; increased levels of pathogen indicators; disruption of sediment and habitat; and, shoaling and shoreline erosion. The Environmental Consequences section of the PEIS contains an analysis of the impacts of these pollutants on water quality. The management measures are designed to prevent the environmental degradation caused by these pollutants.

The implementation of management measures for marinas and recreational boating will reduce the runoff of pollutants to marina waters and mitigate the impacts associated with the siting and design and the operation and maintenance of new and expanding marinas. Management measures for siting and design will control stormwater runoff from marina parking lots and hull maintenance areas thereby reducing the amount of suspended solids, oil, and grease entering marina waters. The measures will protect wetlands, shellfish beds and submerged aquatic vegetation during marina construction; will provide for water quality assessments to determine whether the marina design will affect water quality; will ensure proper circulation for flushing of the marina basin; and will reduce turbidity and shoaling by protecting against shoreline erosion. The measures for operation and maintenance emphasize the proper disposal of fish and solid

wastes and the storage, transfer, containment, and disposal of sewage, oil, antifreeze, solvents, and paints. Restrictions on boating activities in shallow non-marina waters will protect shallow-water habitats and prevent resuspension of sediments and damage to submerged aquatic vegetation.

The implementation of management measures for nonpoint pollution from marinas and recreational boating, based on the existing State programs and authorities discussed below, will result in broader, more widespread implementation of the management measures with the resulting environmental benefits associated with a reduction in marina-related nonpoint pollution. The condition that the State include management measures in its program for shoreline stabilization, stormwater runoff, and fueling station design will help to ensure that marinas are operated and maintained in an environmentally safe manner.

Management Measures for Marinas and Recreational Boating

Siting and Design

1. ***Marina Flushing Management Measure***

This management measure is intended to be applied to new and expanding marinas. Initial site selection is the most important factor influencing the long-term impact a marina will have on water quality within the immediate vicinity of the marina.

2. ***Water Quality Assessment Management Measure***

This management measure is intended to be applied to new and expanding marinas. Water quality assessments such as modeling of flushing rates, measuring water quality characteristics, and monitoring may be used to determine whether a proposed marina design will adversely affect water quality.

3. ***Habitat Assessment Management Measure***

This management measure is intended to be applied to new and expanding marinas where site changes may impact on wetlands, shellfish beds, submerged aquatic vegetation, or other important habitats. Proper siting and design can reduce short-term impacts (habitat destruction during construction) and long-term impacts (water quality, sedimentation, circulation) on the surrounding environment.

4. ***Shoreline Stabilization Management Measure***

This management measure is intended to be applied to new and expanding marinas where site changes may result in shoreline erosion. This measure has been shown to be effective in mitigating shoreline erosion and the resulting turbidity and shoaling.

5. ***Storm Water Runoff Management Measure***

This management measure is intended to be applied to new and expanding marinas, and to existing marinas for at least the hull maintenance areas. Pollutants can be controlled through three techniques: filtration/infiltration; retention/detention; and, physical separation of pollutants.

6. ***Fueling Station Design Management Measure***

This management measure is intended to be applied to new and expanding marinas where fueling stations are to be added or moved. Marinas should be located and designed and a spill contingency plan developed so that pollutants released during fueling operations can be contained in a limited area to minimize spread through and out of the marina.

7. ***Sewage Facility Management Measure***

This management measure is intended to be applied to new and expanding marinas in areas where adequate marine sewage collection facilities do not exist. The availability and use of these systems will reduce discharges of sanitary wastes to the coastal waters.

Subject to the conditions noted, Ohio intends to rely on the following authorities and programs for implementation of the siting and design management measures:

- Ohio's Submerged Lands Lease Program authorizes ODNR's Director to require an environmental impact assessment for marina projects and deny an application for a submerged land lease if the proposed project will have negative impacts upon water quality, including considerations addressed under the water quality and habitat assessment management measures. The program submittal notes that "consideration of marina flushing in the siting and design of new marinas is included as part of the agency review process invoked under ODNR's Submerged Land Lease Program; and the Ohio EPA's Section 401 Water Quality Certification and Clean Water Act programs." Additional information provided by the State included numerous examples of how these programs have been used to ensure that marina flushing was considered in marina design.
- Under Ohio's Marina Licensing Program, new marinas must develop a plan to provide adequate sewage facilities for watercraft. Additionally, under the Clean Vessel Act, Ohio is promoting the installation and usage of adequate sewage facilities at all of Ohio's existing Lake Erie marinas.
- The State's *Rainwater and Land Development* guidance includes recommended strategies for stormwater runoff control.

Conditions.

Within two years, Ohio will include in its program management measures for shoreline stabilization, stormwater runoff, and fueling station design in conformity with the 6217(g) guidance. Within one year, Ohio will submit a legal opinion and supporting documentation to demonstrate that back-up authorities can be used as enforceable policies and mechanisms to implement these management measures throughout the 6217 management area.

Operation and Maintenance

1. ***Solid Waste Management Measure***

This management measure is intended to be applied to new and expanding marinas. Marina operators are responsible for determining what types of wastes will be generated at the marina and ensuring proper disposal. If adequate disposal facilities are available there is less likelihood for disposal of solid waste in surface waters or on shore where the material may wash into the waters.

2. ***Fish Waste Management Measure***

This management measure is intended to be applied to marinas where fish waste is determined to be a source of water pollution. Marina patrons and employees are more likely to properly dispose of fish waste if told of potential environmental effects and provided adequate and convenient disposal facilities.

3. ***Liquid Material Management Measure***

This management measure is intended to be applied to marinas where liquid materials used in the maintenance, repair, or operation of boats are stored. This measure minimizes entry of potentially harmful liquid materials into marina and surface waters through proper storage and disposal.

4. ***Petroleum Control Management Measure***

This management measure is intended to be applied to boats that have inboard fuel tanks. The amount of fuel and oil entering marina and surface waters can be reduced by using devices such as automatic shut-off nozzles, fuel/air separators, and oil-absorbing bilge pads.

5. ***Boat Cleaning Management Measure***

This management measure is intended to be applied to marinas where boat topsides are cleaned and marinas where hull scrubbing in the water has been shown to result in water or sediment quality problems. This measure minimizes the use and release of potentially harmful cleaners and bottom paints to marina and surface waters.

6. ***Public Education Management Measure***

This management measure is intended to be applied to all environmental control authorities in areas where marinas are located. The best method of preventing pollution from marinas and boating activities is to educate the public about the causes and effects of pollution and methods to prevent it.

7. ***Maintenance of Sewage Facilities Management Measure***

This management measure is intended to be applied to marinas where marine sewage disposal facilities exist. This measure is effective in preventing failure of pumpouts and discourages improper disposal of sanitary wastes thus reducing the release of untreated sewage into marina and surface waters.

8. ***Boat Operation Management Measure (applies to boating only)***

This management measure is intended to be applied in non-marina surface waters where evidence indicates that boating activities are impacting shallow-water habitats. Boat operation in shallow water can resuspend bottom sediment, increase turbidity, and damage submerged aquatic vegetation. This management measure will minimize damage to sensitive habitats by excluding boats from shallow-water areas not suitable for boat traffic because of their ecological importance. Establishing no-wake zones will minimize the indirect impacts of increased turbidity.

Subject to the conditions noted, Ohio intends to rely on the following authorities and programs for implementation of the operation and maintainance management measures:

- Ohio's Marina Licensing Program requires marina owners and operators to provide for the proper storage and disposal of all wastes generated at the marina, including motor oil, antifreeze, and lead batteries and wastes associated with boat cleaning operations.
- Leasing conditions established under ODNR's Submerged Lands Lease Program can be imposed to require the proper storage and disposal of solid wastes. ODNR requires marinas with dockage for watercraft having permanently installed sewage holding tanks to provide a sewage pumpout facility.
- Ohio also promotes clean boating through a number of public education programs, including the Boating Education Program and the Boating and the Environment Program, which addresses boat cleaning and operation, as well as petroleum control and other operation and maintenance measures.

Conditions

Within two years, Ohio will include in its program management measures for fish waste and petroleum control in conformity with the 6217(g) guidance. Within one year, Ohio will submit a legal opinion and supporting documentation to demonstrate that back-up authorities can be used as enforceable policies and mechanisms to implement these management measures throughout the 6217 management area, as described in the *Final Administrative Changes* (see Section XIII.)

e. **Hydromodification Nonpoint Pollution Source Category**

Hydromodification is the leading source of aquatic life use impairment and the origin of the habitat degradation and siltation problems that are the cause of impairment in so many waterbodies in Ohio (Ohio EPA, 1998). The ODNR's Division of Water has identified more than 50,000 dams in Ohio. Most of the dams are small and were constructed by farmers and other private individuals for water supply, recreation, swimming and fishing. Only about 1,000 dams statewide and 400 dams in the Ohio 6217 management area meet the following section 6217(g) definition for dams.

- Constructed impoundments 25 feet or more in height and greater than 15 acre-feet in capacity, or;
- Constructed impoundments 6 feet or more in height and greater than 50 acre-feet in capacity.

Dams have a significant impact on state waters in Ohio. Hypolimnetic dam releases and channelization adversely affect biological and water quality conditions in the Cuyahoga River (Headwaters to Black Brook). Hypolimnetic dam releases from Lake Rockwell and flow regulation/modification contribute to aquatic use impairments in the Cuyahoga River (Congress Lake Outlet To Lake Cuyahoga) (Ohio EPA, 1998).

In Ohio, the U.S. Army Corps of Engineers spends approximately $10 million annually to dredge an estimated 2 million cubic yards of sediments from the shipping channels and harbors of Lake Erie. Dredging activities are a contributory factor to habitat destruction in the estuary portion of the Chagrin River (East Branch to lake Erie) and in a segment of the Cuyahoga River (Big Creek to Ship Channel) (Ohio EPA, 1998). Many miles of natural stream habitat have been degraded by channel modification. Streambank modification/destabilization is a moderate contributor to habitat alterations in the Ashtabula River. Channelization contributes to water quality impairments in Racoon Creek, Little Racoon Creek and Gries Ditch in Sandusky County and Arcola Creek in Ashtabula County.

Shore erosion is of great concern to many shoreline residents and property owners, particularly during the recent period of high lake levels. Ohio faces serious property damages due to shore erosion, especially in areas of high bluffs and erodible sediments such as sand, glacial till and clay. Fluctuating lake levels are also a key concern. Properties losses of as much as $100 million annually have occurred due to flooding and erosion.

Management measures have been developed for the following three subcategories of sources of nonpoint pollution from hydromodification activities that affect coastal waters:

- o Channelization and channel modification
- o Dams
- o Streambank and shoreline erosion

The main effects of the pollutants associated with hydromodification activities that affect water quality include: changed sediment supply, reduced availability of fresh water, accelerated delivery of pollutants, loss of surface water contact with overbank areas, loss or alteration of wetlands and instream and riparian habitats, blocked or impeded migration routes of fish, and increased sediment and nutrient levels. The Environmental Consequences section of the PEIS contains an analysis of the impacts of these pollutants on water quality. The management measures are designed to prevent the environmental degradation caused by these pollutants.

The implementation of management measures for hydromodification activities are intended to prevent degradation of the physical and chemical characteristics of surface waters and detrimental changes to instream and riparian habitat resulting from the transport of pollutants and from alterations in the supply of sediment and freshwater. The measures will minimize erosion, control sediment runoff, prevent downstream contamination from pesticides, petrochemicals, fertilizers, lime, cement, and construction chemicals, and protect the quality of water and aquatic habitat in reservoirs. The measures will also protect eroding streambank and shorelines that constitute a nonpoint pollution source that contributes to increased turbidity and nutrient levels in costal waters.

The implementation of management measures for nonpoint pollution from hydromodification, based on the existing State programs and authorities discussed below, will result in broader, more widespread implementation of the management measures with the resulting environmental benefits associated with a reduction in nonpoint pollution resulting from hydromodification. Additional environmental benefits will result from the requirements that the State include in its program management measures for developing an operation and maintenance program for existing modified channels, streambank and shoreline erosion, chemical and pollutant control for dams, and protection of surface water quality and instream and riparian habitat for dams.

Management Measures for Hydromodification

Conditions

Within two years, Ohio will include in its program management measures for developing an operation and maintenance program for existing modified channels, streambank and shoreline erosion, chemical and pollution control for dams, and protection of surface water quality and instream and riparian habitat for dams in conformity with the 6217(g) guidance. Within one year, Ohio will submit a legal opinion and supporting documentation to demonstrate that back-up authorities can be used as enforceable policies and mechanisms to implement the hydromodification management measures throughout the 6217 management area, as described in the *Final Administrative Changes* (see Section XIII.).

Channelization and Channel Modification

1. ***Management Measure for Physical and Chemical Characteristics of Surface Waters***

This management measure is intended to be applied to public and private channelization and channel modification activities in order to prevent the degradation of physical and chemical characteristics of surface waters from such activities. The purpose of this management measure is to ensure that the planning process for new hydromodification projects addresses changes to physical and chemical characteristics of surface waters that may occur as a result of the proposed work.

2. ***Instream and Riparian Habitat Restoration Management Measure***

This management measure pertains to surface waters where channelization and channel modification have altered or have the potential to alter instream and riparian habitat such that historically present fish or wildlife are adversely affected. The purpose of this management measure is to correct or prevent detrimental changes to instream and riparian habitat from the impacts of channelization and channel modification projects.

Subject to the conditions noted, Ohio intends to rely on the following authorities and programs for implementation of the channelization and channel modification management measures:

• For the first two elements of the channelization and channel modification management measures the State Scenic Rivers program can be used in addition to the Clean Water Act Section 404/401 program to discourage hydromodification projects on selected segments, and the Division of Wildlife regulations give the State enforcement authority when severe degradation of habitat or water quality occurs.

Dams

1. ***Management Measure for Erosion and Sediment Control***

This management measure is intended to be applied to the construction of new dams, as well as to construction activities associated with the maintenance of dams. The purpose of this measure is to prevent sediment from entering surface waters during the construction or maintenance of dams. The purpose of this measure is to prevent sediment from entering surface waters by minimizing erosion and maximizing sediment retention onsite to reduce impacts on surface water quality.

2. ***Management Measure for Chemical and Pollutant Control***

This management measure is intended to be applied to the construction of new dams, as well as to construction activities associated with the maintenance of dams. The purpose of this measure is to prevent downstream contamination from pollutants such as pesticides, petrochemicals, fertilizers, lime, cement, and construction chemicals. This measure will provide for retention onsite of the soluble pollutants that are not easily controlled by erosion and sediment control practices.

3. ***Management Measure for Protection of Surface Water Quality and Instream and Riparian Habitat***

This management measure is intended to be applied to dam operations that result in the loss of desirable surface water quality, and of desirable instream and riparian habitat. The purpose of this measure is to protect the quality of surface waters and aquatic habitat in reservoirs and in the downstream portions of rivers and streams that are influenced by the quality of water contained in the releases (tailwaters) from reservoir impoundments.

Subject to the conditions noted, Ohio intends to rely on the following authorities and programs for implementation of the management measures for dams:

• In addition to CWA Section 401/404 permit conditions, the State's Scenic Rivers Program and the Dam Safety Program provide additional protections to water quality for dam construction projects. See Section XIII for additional information on using Section 401 certifications as backup authorities. As for construction site erosion and sediment control, the State's implementation of the NPDES Storm Water Phase I and II programs will be sufficient to meet the erosion and sediment control management measure.

• For the chemical and pollution control management measure for dams, Ohio will use the Dam Safety Program and the Pesticide Licensing and Registration Program.

Streambank and Shoreline Erosion

1. ***Management Measure for Eroding Streambanks and Shorelines***

This management measure is intended to be applied to eroding shorelines in coastal bays, and to eroding streambanks in coastal rivers and creeks. This measure applies only to eroding shorelines and streambanks that constitute a nonpoint source pollution problem in surface waters. The application of vegetative or engineering stabilization techniques are effective in controlling coastal erosion. These techniques also serve to halt the destruction of wetlands and riparian areas.

Subject to the conditions noted, Ohio intends to rely on the following authorities and programs for implementation of the management measure for eroding streambanks and shorelines:

• Through the Conservation Reserve Enhancement Program, Ohio has committed to fund $2 million per year, affecting two thirds of Ohio's Lake Erie basin.

• The Stewardship Incentive program provides financial assistance up to 75 percent for landowners to stabilize streambanks with woody vegetation.

• The Conservation Works of Improvement Program provides funding and technical assistance for projects such as drainage and erosion control.

• An updated Ohio Stream Management Guide.

f. **Wetlands, Riparian Areas, and Vegetated Treatment System**

About 90 percent of Ohio's original extent of wetlands - approximately 5 million acres - have been lost to other uses (Ohio CNP, 1999). An extensive barrier beach and wetland system originally comprised the Lake Erie shoreline from Sandusky to Toledo and northward to Detroit. Wetlands of the original Black Swamp covered nearly 300,000 acres throughout the western Lake Erie watershed. Today only about 33,000 acres of coastal wetlands remain in Ohio. Draining and filling of the wetlands and swamp forests for agriculture and urban land uses are the main reasons for loss of wetlands. Erosion and the recent high water level of Lake Erie have also contributed to the losses.

The Ohio Division of Wildlife is participating in cooperative restoration projects on both private and public lands. Some 3,800 acres of coastal wetlands have been protected, restored or enhanced under the guidelines of the North American Waterfowl Management Plan. The estuary portion of the Chagrin River (East Branch to Lake Erie) is threatened by the destruction of habitat caused by dredging and the removal of riparian vegetation. The drainage of wetlands along the Cuyahoga River (headwaters to Black Brook) has adversely affected the biological and water quality conditions of the river (Ohio EPA, 1998).

When hydrologic changes or pollutants exceed the natural assimilative capacity of wetlands and riparian areas, the systems become stressed and may be degraded or destroyed to the point that the wetlands and riparian areas themselves become sources of nonpoint pollution in coastal waters. A degraded wetland has less ability to remove pollutants and can deliver increased amounts of sediment, nutrients, and other pollutants to the adjoining waterbody.

Management measures for wetlands, riparian areas, and vegetated treatment systems address multiple categories of nonpoint source pollution that affect coastal waters, including the

five specific categories of sources previously addressed in this chapter. These measures promote the protection and restoration of wetlands and riparian areas and the use of vegetated treatment systems as means to control the nonpoint pollution emanating from such sources. Degradation of existing wetlands and riparian areas can cause the wetlands and riparian areas themselves to become sources of nonpoint pollution in coastal waters.

Management measures are provided for three categories:

- Protection of wetlands and riparian areas
- Restoration of wetlands and riparian areas
- Promoting the use of vegetated treatment systems, such as constructed wetlands and vegetated filter strips

The Environmental Consequences section of the PEIS contains a discussion of the functions and importance of wetlands, riparian areas, vegetated buffers, and vegetated treatment systems.

The intent of the management measures for wetlands, riparian areas and vegetated treatment systems is to ensure that the nonpoint benefits of protecting and restoring wetlands and riparian areas, and of constructing vegetated treatment systems, will be considered in all coastal watershed water pollution control activities. The implementation of management measures will protect and restore the full range of functions for wetlands and riparian areas serving a nonpoint source abatement function and ensure that they do not become a significant nonpoint source due to degradation.

The implementation of management measures for nonpoint pollution in wetlands, riparian areas and vegetated treatment systems, based on the existing State programs and authorities discussed below, will result in broader, more widespread implementation of the management measures with the resulting environmental benefits associated with a reduction in nonpoint pollution in such areas.

Management Measures for Wetlands, Riparian Areas and Vegetated Treatment Systems

1. ***Management Measure for Protection of Wetlands and Riparian Areas***

This management measure is intended to be applied to protect wetlands and riparian areas from adverse nonpoint source pollution impacts. The purpose is to protect the existing water quality improvement functions of wetlands and riparian areas as a component of nonpoint source programs. The overall approach is to establish a set of practices that maintains functions of wetlands and riparian areas and prevents adverse impacts to areas serving a nonpoint source pollution abatement function. These pollution abatement functions are most effective as parts of an integrated land management system that combines nutrient, sediment, and soil erosion control.

2. ***Management Measure for Restoration of Wetland and Riparian Areas***

This management measure is intended to be applied to restore the full range of wetlands and riparian functions in areas where the systems have been degraded and destroyed and where

they can serve a significant nonpoint source abatement function. This management measure should be used in conjunction with other measures addressing the adjacent land and water use in order to protect coastal water quality.

3. ***Management Measure for Vegetated Treatment Systems***

This management measure is intended to be applied in cases where engineered systems of wetlands or vegetated treatment systems can treat nonpoint source pollution. Constructed wetlands and vegetated filter strips can serve a significant nonpoint source pollution abatement function. Vegetated filter strips can improve water quality by removing nutrients, sediment, suspended solids, and pesticides. Constructed wetlands can provide limited ecological benefits in addition to their nonpoint source control functions.

Ohio intends to rely on the following authorities and programs for implementation of the management measures for Wetlands, Riparian Areas, and Vegetated Treatment Systems:

• Ohio cites the CWA Section 404 permitting and Section 401 certification programs as the primary regulatory authority for the wetlands and riparian areas measures. Ohio has developed water quality standards for wetlands that include provisions to protect biological and physical characteristics and water quality necessary to support existing habitats and populations of wetlands flora and fauna. Under ORC 6111, the Director of Ohio EPA may issue, modify, or revoke orders to prevent, control, or abate water pollution. The Ohio EPA may revoke a Section 401 water quality certification or enforce special conditions of a certification. In addition, Ohio has a wetlands antidegredation policy in place that is protective of wetland functions, including nonpoint source abatement functions. This policy applies to activities that require 401 water quality certifications, as well as projects that do not need to have such certifications (OAC 3745-1-54). ODNR has also issued a policy statement stating that it will "disallow harmful alterations in the natural flow of water that nourishes wetlands and to protect wetlands from alteration by dredging, filling or draining, solid waste disposal, direct and indirect effects of construction activities, siltation, or the addition of pesticides and other pollutants from point and nonpoint sources of pollution." The State's Water Quality Certification Program has imposed general and specific conditions on many Section 404 nationwide general permits.

• Several voluntary programs such as the Natureworks Program and the State Nature Preserve Program.

• Ohio has developed a comprehensive statewide wetlands inventory system and is initiating a statewide Wetland Restoration and Mitigation Strategy that will provide a blueprint for Ohio wetland restoration and mitigation efforts.

• The *Rainwater and Land Development* guidance sets forth recommended BMPs for nonpoint pollution prevention before, during, and after construction. The use of vegetated treatment systems is promoted in this manual as a recommended BMP to act as a control on nonpoint source pollution.

ENVIRONMENTAL CONSEQUENCES

4.A MANAGEMENT MEASURES IMPLEMENTATION, continued

2. SOCIOECONOMIC IMPACTS

a. Section 4.A.2 of the PEIS provides a summary of the economic implications of the management measures guidance as described in the Regulatory Impact Analysis prepared by EPA (EPA, 1992c). This section also summarizes the economic achievability analyses performed for all nonpoint source categories (USEPA, 1992b; Ogg, 1992; DPRA, 1992; Research Triangle Institute, 1992a, 1992b, 1992c). These analyses provided a relative sense of the economic impacts of the management measures on affected households, municipalities, and commercial enterprises. EPA has determined from these studies that all the management measures specified in its guidance document are economically achievable.

In developing the (g) guidance document, EPA adopted a flexible approach that emphasized broad principles or standards for nonpoint source pollution control that can be applied nationally. This allows states to develop more specific programs that reflect the most cost-effective approaches in response to local conditions.

While the implementation of management measures will entail some economic costs to Ohio, the flexibility embodied in the (g) guidance and in the NOAA/EPA Program Development and Approval Guidance, will help to reduce the economic impacts associated with implementing the coastal nonpoint program. For example, Ohio will have until the year 2006 to fully implement the (g) management measures and until 2016 to fully implement its coastal nonpoint program, including additional management measures, where necessary. This ability to phase in program implementation over several years allows economic impacts to be absorbed over a longer time period. Another aspect of the flexibility in the program is that states may also exclude categories, subcategories, or individual nonpoint sources where the sources do not exist or do not present a threat to coastal waters. This allows states to adapt their programs to local conditions thus implementing their programs in a more cost effective manner. Based on this flexibility, Ohio proposed, and NOAA and EPA approved, an exclusion for the forestry source category.

States may also adopt voluntary, education, and market-based incentive systems in addition to regulatory programs as a means of management measure implementation. Ohio's public participation activities have and will continue to provide opportunities for public education and input regarding the coastal nonpoint program. The State's activities include forming six issue-specific working groups to develop recommendations and action items for incorporation into the nonpoint program. Ohio conducted a series of meetings and public briefings to obtain input in relation to the upgrade of the statewide nonpoint source management program. Ohio also provided a 30 day public review and comment period on the program.

b. The implementation of management measures will also produce positive socioeconomic benefits for Ohio. Implementation of the program will begin to fulfill the intent of section 6217 by helping to control sources of nonpoint pollution thus resulting in a reduction of pollution reaching coastal waters. Positive socioeconomic benefits will accrue as improvements in coastal water quality resulting from controlling nonpoint pollution increase the aesthetic value of coastal areas thereby benefitting tourism and providing enhanced opportunities for boating and swimming and other water related activities. Improvements in water quality are also likely to improve fisheries and wildlife habitat. There may be some slight and localized socioeconomic

impacts from implementation of management measures and because of restrictions that may result from designation of critical coastal areas.

4.B PROGRAM IMPLEMENTATION

1. ENVIRONMENTAL IMPACTS

Section 6217 requires that state and territory coastal nonpoint programs contain a number of specific components to be used in developing and implementing their programs. These components are:

- Coordination with Existing State Programs
- Determination of the 6217 Management area
- Implementation of Management Measures in Conformity with (g) Guidance
- Identification and Implementation of Additional Management Measures
- Technical Assistance
- Public Participation
- Administrative Coordination
- Identification of Enforceable Policies and Mechanisms

The environmental consequences of these components are discussed below.

a. Coordination with Existing State Programs

The statute requires that coastal nonpoint programs be closely coordinated with state and local water quality plans and programs and with state and territory coastal zone management programs. This requirement is necessary to ensure that the new coastal nonpoint program can build upon and be integrated into existing state programs upon approval. States and territories should develop their programs to complement and strengthen existing coastal management and nonpoint source authorities. This should produce a positive environmental consequence by minimizing unnecessary duplication or conflicts at the Federal, state, or local levels. It will also fulfill what the statute and legislative history indicate is the central purpose of section 6217, i.e., to strengthen the links between Federal and state coastal zone management and water quality programs in order to enhance state and local efforts to manage land use activities that degrade coastal waters.

Ohio's Nonpoint Source Program has historically been the joint responsibility of the ODNR and the Ohio EPA. Ohio's Division of Real Estate and Land Management (REALM) within ODNR has the lead for implementing the OCMP. Under ODNR's Cooperative Agreement with NOAA, the Division of Soil and Water Conservation is responsible for overseeing development of Ohio's Coastal Nonpoint Pollution Control Plan.

Ohio uses a Policies and Programs Coordinating Committee to ensure continuing communication among other agencies networked in the program and to help coordinate the activities of the agencies. Memoranda of Understanding (MOUs) have also been developed between ODNR and the Ohio EPA and ODOT to facilitate coordination among agencies. For purposes of coordinating its Coastal Nonpoint Pollution Control Plan, Ohio plans to use the

existing network it has developed for the OCMP. Additionally, the MOU between ODNR and Ohio EPA specifically commits the two agencies to cooperate fully in the planning and development of the coastal nonpoint source pollution control program.

b. 6217 Management area

As directed by section 6217, NOAA, in consultation with EPA, reviewed each state's existing coastal zone boundary established under the CZMA, and made recommendations to the states on the geographic scope of their programs, i.e., the 6217 management area. This boundary recommendation, which was based on coastal watersheds, is a guide for states to use during program development. States may propose an alternative 6217 management area at the time of program submission. This proposal will then be evaluated by NOAA and EPA as part of the program review and approval process.

This provision has a positive environmental effect because it recognizes that land and water uses both within and outside of the existing coastal zone have the potential to degrade coastal waters. Evaluating coastal watersheds, whether or not those watersheds are completely encompassed within a state's existing coastal zone, ensures that all potential sources of nonpoint pollution that significantly affect coastal waters are included in the coastal nonpoint programs.

Ohio has determined that NOAA's recommended management area for the 6217 program is appropriate to control the land and water uses that have a significant impact on the State's coastal waters and therefore has adopted NOAA's recommendation as the State's 6217 management area. This area generally includes the entire Lake Erie watershed, which includes portions of 35 counties and covers an area of 11,649 square miles. The major stream basins within the Lake Erie watershed include the Maumee, Portage, Sandusky, Huron, Vermillion, Black, Rocky, Chagrin, Cuyahoga, Grand and Ashtabula.

c. Implementation of Management Measures in Conformity with (g) Guidance

For program approval, each coastal nonpoint program must provide for the implementation, at a minimum, of management measures in conformity with the guidance published by EPA under section 6217(g). As discussed in section 4.A, this guidance addresses five categories of nonpoint pollution: agricultural runoff, urban runoff, forestry runoff, marinas, and hydromodification. Guidance is also provided for wetlands, riparian areas, and vegetated filter strips. The environmental consequences of implementing each of these management measures is discussed above in section 4.A.1. In order to satisfy statutory requirements, state programs must identify the nonpoint source categories that will be addressed; management measures for those categories; and the process by which the state will ensure the implementation of the management measures. Each coastal nonpoint program must address each of the management measures by either implementing that measure (or an equally effective alternative), or justifying why the management measure is not included in the program.

The requirement that states implement the appropriate measures should have a positive environmental effect because the management measures are designed to reduce pollution from categories and sources of nonpoint pollution that can adversely impact a state's coastal waters. In

addition, a state may include management measures for sources not identified in the 6217(g) guidance, if it determines such measures are necessary to protect coastal waters.

Ohio requested, and NOAA and EPA approved, an exclusion for the forestry source category. Ohio has demonstrated that forestry activities are not significant contributors of pollutants to Ohio's coastal areas.

d. Requirements for Implementation of Additional Management Measures

For program approval, coastal nonpoint programs must provide for the implementation of additional management measures where coastal water quality is impaired or threatened even after the implementation of the management measures specified in the (g) guidance. These additional management measures are to be applied to both existing land and water uses that are found to cause or contribute to water quality impairment and to new or substantially expanding land uses within critical coastal areas adjacent to impaired or threatened coastal waters.

This requirement should have a beneficial environmental effect because it provides a second tier of protection where necessary to attain and maintain water quality standards and protect critical areas against future pollution problems.

Ohio's program provides for the identification of additional management measures and the continuing revision of management measures applicable to critical coastal areas and cases where (g) measures are fully implemented but water quality threats or impairments persist. Ohio has identified its entire coastal zone management area, and the land area within a two-mile radius of new (since 1994) urban areas along the Lake Erie shoreline, as critical coastal areas.

Ohio will evaluate both available water quality monitoring data and monitoring data that is generated under proposed expanded monitoring programs to identify those waters where water quality impairments persist. Ohio will also evaluate the implementation and effectiveness of existing management measures to determine whether additional measures are warranted.

e. Technical Assistance

For program approval, coastal nonpoint programs are required to provide for technical and other assistance to local governments and the public for implementing the additional management measures. States are also encouraged to provide assistance to local governments and the public for the implementation of the (g) guidance measures. Assistance may be provided in developing ordinances and regulations, technical guidance, training, financial incentives, or demonstration projects.

This requirement should be environmentally beneficial because the technical assistance will enable the management measures to be better implemented at the regional or local level. The assistance will address local needs with respect to implementation and will provide a better understanding of what the measures are trying to accomplish and how to best accomplish it. EPA has assembled a great deal of technical information during the development of its guidance document. This information will be available to the states in a variety of formats, including bibliographies and summaries, and by electronic bulletin boards.

Technical assistance for implementation of Ohio's program will be provided under existing partnership programs implemented by Ohio's Coastal Management Program and Nonpoint Source Management Plan and will be strengthened as additional programs and strategies for addressing coastal nonpoint concerns in Ohio are identified and implemented.

f. Public Participation

For program approval, states must provide opportunities for public participation in all aspects of the coastal nonpoint program. Congress intended that the public be involved in the development and implementation of the program, calling not only for public participation, but also for public education.

Involving the public early in the development of the program should help improve acceptance of the program and promote and maintain the public's long-term commitment to support the goals of section 6217. Specifically providing opportunities for public comment, especially by those regulated or affected by the program, prior to program development and implementation, can ensure that the program will be accepted, and therefore more effective in controlling nonpoint pollution. The public education aspect of the requirement should be beneficial by making individuals more aware of the impact of their actions on coastal waters and by generating support for pollution control efforts at the state and local level.

Ohio describes public participation measures that were implemented leading up to the development of both the Ohio coastal nonpoint program and the statewide nonpoint source management plan. Six issue-specific working groups (e.g., agriculture, forestry, etc.) were formed to develop recommendations and action items for incorporation into the State's coastal nonpoint program and the statewide nonpoint source management plan. These working groups appear to have involved a diverse representation of public and private stakeholders. Ohio conducted a series of meetings and public briefings to secure input in relation to the upgrade of the statewide NPS management program.

g. Administrative Coordination

For program approval, the coastal nonpoint program must include administrative coordination mechanisms. At a minimum, the program must include a list of state, regional and local agencies and the role that they will play in developing and implementing the program.

This requirement will be environmentally beneficial because it will help avoid conflicts and duplication of effort among the agencies involved in the coastal nonpoint program and ensure that the various agencies are fulfilling their responsibilities to implement the program. In recognizing their specific responsibilities, agencies will be able to refine policies and procedures and maximize limited resources to more effectively support the goals of section 6217.

As discussed in section 4.B.1.a above, the primary mechanisms for implementation of the Ohio nonpoint program will be to use the existing network it has developed for the OCMP. Additionally, the MOU between ODNR and Ohio EPA specifically commits the two agencies to cooperate fully in the planning and development of the coastal nonpoint source pollution control program.

h. Monitoring

For program approval, the coastal nonpoint program must contain a description of any necessary monitoring techniques to accompany the management measures to assess over time the success of the measures in reducing pollution loads and improving water quality. The EPA (g) guidance provides guidance for measuring changes in pollution loads and in water quality that may result from the implementation of management measures and for ensuring that the measures are implemented, inspected, and maintained properly.

This requirement should have a beneficial environmental effect because water quality monitoring is the most direct and defensible tool available to evaluate water quality and its response to management measures and other factors. By tracking management measures and water quality simultaneously, states will be able to evaluate the performance of the management measures and determine the need for additional management measures to meet water quality objectives.

As discussed in Section 2.B(10) of this EA, the Ohio program submission does not include a monitoring plan. In order to receive final program approval, within one year the State must develop a plan that enables the State to assess over time the extent to which implementation of management measures is reducing pollution loads and improving water quality.

To evaluate the effectiveness of its program, Ohio will employ existing water quality monitoring efforts and Best Management Practices implementation programs, and as resources allow, will evaluate the feasibility of creating local watershed action plans, demonstration projects, paired watershed studies, and other techniques. The Ohio program acknowledges that addressing deficiencies in Best Management Practices tracking is a priority.

i. Enforceable Policies and Mechanisms

For program approval, the coastal nonpoint program must contain enforceable policies and mechanisms to implement the applicable requirements of section 6217, i.e., the (g) measures and additional management measures. The term “enforceable policy” is defined in the CZMA to mean state policies which are legally binding through constitutional provisions, laws, regulations, land use plans, ordinances, or judicial or administrative decisions, by which a state exerts control over private and public land and water uses and natural resources in the coastal zone. Voluntary approaches, including economic incentives, may be used to implement management measures as long as they are backed by enforceable authorities.

This requirement will be environmentally beneficial because states will be able to use a variety of regulatory and/or non-regulatory approaches in order to ensure implementation of the management measures. In addition, the selection and design of enforceable policies can be tailored to specific state or local circumstances. The success of the implementation of the policies can also be enhanced through public education and technical assistance programs.

Ohio's coastal nonpoint program is a networked program. The state coastal management agencies, the Division of Real Estate and Land Management and the Division of Soil and Water Conservation within the Ohio Department of Natural Resources (ODNR), and the Ohio EPA are responsible for developing, submitting and implementing the program.

Ohio's agricultural management measures will be implemented through its Agricultural Pollution Abatement Program, Water Pollution Control Laws, Ohio Department of Agriculture regulatory standards for the use, storage, and handling of pesticides, and the Water Quality Rules authority under the Stream Litter Law.

Ohio's urban management measures will be implemented through the NPDES Storm Water Phase I and II programs; Water Quality Standards and the Stream Litter Law; the authority local governments have to regulate stormwater and land development through local ordinances, resolutions, or zoning resolutions; voluntary and incentive-based technical assistance programs such as the Nonpoint Education for Municipal Officials (NEMO) program and the Lake Erie Protection Fund; the guidelines for stormwater management (*Rainwater and Land Development*, 1996); the Household Sewage Disposal Rules; the Phosphorus Reduction Strategy; the Semipublic Sewage System Program; ODOT's Handbook for Erosion and Sediment Control; and the Pesticide Licensing and Registration Program.

Management measures for marinas will be implemented through Ohio's Submerged Lands Lease Program, Ohio EPA's Section 401 Water Quality Certification and Clean Water Act programs, Ohio's *Rainwater and Land Development* guidance, the Marina Licensing Program, the Boating Education Program, and the Boating and the Environment Program.

Management measures for hydromodification will be implemented through the State Scenic Rivers program, the Clean Water Act Section 404/401 program, the Division of Wildlife regulations, the Dam Safety Program, Section 401 certifications, NPDES Storm Water Phase I and II programs, the Pesticide Licensing and Registration Program, the Conservation Reserve Enhancement Program, the Stewardship Incentive Program, the Conservation Works of Improvement Program, and an updated Ohio Stream Management Guide.

Management measures for wetlands, riparian areas, and vegetated treatment systems will be implemented through the Clean Water Act Section 404 permitting and Section 401 certification programs, water quality standards for wetlands, a wetlands antidegredation policy, voluntary programs such as the Natureworks Program and the State Nature Preserve Program, a statewide Wetland Restoration and Mitigation Strategy, and the *Rainwater and Land Development* guidance

PROGRAM IMPLEMENTATION

2. SOCIOECONOMIC IMPACTS

There should not be any significant socioeconomic impacts associated with the specific components required to be used in developing and implementing the Ohio coastal nonpoint program. However, some impacts may result from efforts to protect and restore coastal waters.

The designation of critical coastal areas and the future implementation of additional management measures may prohibit development and certain land and water uses in some areas. Ohio has identified its entire coastal zone management area, and the land area within a two-mile radius of new (since 1994) urban areas along the Lake Erie shoreline, as critical coastal areas.

Additional technical assistance may be required by local governments and the public in formulating and applying additional management measures. However, because Ohio currently has a number of technical assistance programs, no significant additional economic impacts should result. These technical assistance programs will be used to assist municipalities and the general public with implementation of the additional management measures.

A positive impact will be attained through Ohio's existing and planned public participation efforts, such as the Sustainable Watershed Protection Program. These efforts give the public the opportunity to participate in the development of the nonpoint program and help to improve public acceptance of the program. These efforts should also lead to attitude and behavior changes as people become more aware of the environmentally beneficial goals of the coastal nonpoint program. This will produce an increased public awareness of the potential impacts of their activities on the environment and lead to less pollution and lower socioeconomic costs.

4.C ENVIRONMENTAL / SOCIOECONOMIC IMPACTS OF ALTERNATIVES

a. Approval of Ohio Coastal Nonpoint Program

As discussed in the preceding sections, approval of the Ohio coastal nonpoint program would have a beneficial effect on the environment because it would help to control sources of nonpoint pollution and would result in fewer pollutants reaching coastal waters. For example, the nonpoint program could help to control runoff from rural and urban areas and seepage from faulty septic systems. A serious problem in Ohio is surface water impairment and degradation of aquatic habitat caused by hydromodification activities. Pollutants contributing to impairments of Lake Erie water quality come largely from runoff of nutrients from agricultural lands and from combined sewer overflows. The program could also assist in the clean-up of contaminated sediments in the Ashtabula River Area of Concern and restoring wetlands in the Cuyahoga River Area of Concern. The coastal nonpoint program would make existing programs more effective by strengthening the links between Federal and Ohio state coastal zone management and water quality programs, thereby improving state and local efforts to manage land use activities that degrade coastal waters and habitats.

The requirement for the program to develop additional management measures, to identify critical coastal areas and coastal waters that are not attaining water quality standards, and to identify the land uses that cause or threaten those coastal waters would have a positive environmental effect by focusing attention on existing or potential problem areas that could degrade coastal waters. Ohio's 305(b) Report, the nonpoint source assessment of surface waters, identifies and contains descriptions of the state's waterbodies that are threatened and impaired by nonpoint source pollution. A number of cooperative efforts (e.g., Ohio's Agricultural Pollution Abatement Program) are underway to prevent and mitigate nonpoint sources of pollution to these identified areas where nonpoint pollution impacts are known to exist or threaten water quality. Ohio's Nonpoint Source Management Plan contains a chapter on Sustainable Watershed Protection Programs that includes recommendations from coastal and statewide nonpoint source workgroups. Based on these efforts, additional management measures will be developed to address these threatened and impaired waters.

The approval of the Ohio coastal nonpoint program would also have positive socioeconomic benefits. The improvements in coastal water quality that would result from controlling nonpoint source pollution would increase the aesthetic value of coastal areas, and would benefit tourism and provide opportunities for boating and swimming and other water-related activities.

b. Conditional Approval of Ohio Coastal Nonpoint Program

The conditional approval of the Ohio coastal nonpoint program will have a beneficial effect on the environment because it will produce the same beneficial results as approval, provided Ohio satisfies the conditions, and will, at least temporarily, avoid the adverse impacts of denying approval. The implementation of portions of a conditionally approved program will begin to fulfill the intent of section 6217 by helping to control sources of nonpoint pollution and will result in fewer pollutants reaching coastal waters. The same socioeconomic impacts resulting from changes in the pattern of land and water uses that are associated with approval of the Ohio program should also result from conditional approval.

c. Deny Approval of Ohio Coastal Nonpoint Program

The denial of approval of the Ohio coastal nonpoint program would result in a reliance on existing programs to control nonpoint source pollution. It would result in the loss of a portion of Federal funds awarded under section 306 of the CZMA and section 319 of the CWA. This may produce adverse environmental impacts because it may cause the state not to implement management measures that are meant to control nonpoint pollution.

Hydromodification is the single major source of impairment of aquatic life in Ohio's rivers and streams. Ohio's nonpoint source assessment indicates that many of the rivers and streams in the Lake Erie Basin are degraded by polluted runoff and land use activities. The effects of polluted runoff can be seen in destroyed fish habitat, fish kills, siltation in harbors and streams, and declining recreational use of coastal waters. Denial of this program could contribute to the continued deterioration of the state's water bodies.

The denial of approval might have an adverse economic impact because the continued degradation of water quality will affect the recreational and commercial uses and users of coastal waters. Denying approval might also cause the state not to implement a second tier of pollution control provided by additional management measures that are meant to restore degraded coastal waters and protect critical coastal areas against future pollution.

4.D UNAVOIDABLE ADVERSE ENVIRONMENTAL IMPACTS

The conditional approval of the Ohio coastal nonpoint pollution control program and the implementation of management measures should not produce any unavoidable adverse environmental impacts. The Ohio coastal nonpoint program is intended to protect the environment by controlling nonpoint pollution and protecting and restoring coastal waters. There may be some changes in the patterns of land and water uses in order to avoid activities that

degrade coastal waters and habitats. These changes in activities, such as directing development away from critical coastal areas, should not result in any unavoidable adverse environmental impacts. In addition, section 6217(g) requires a description of any necessary monitoring techniques to accompany the management measures to assess over time the success of the measures in reducing pollution loads and improving water quality. The Ohio program addresses these required monitoring techniques in Chapter 11 of the program.

4.E RELATIONSHIP BETWEEN SHORT-TERM USES OF ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The overall purpose of section 6217 and the Ohio coastal nonpoint control program is to protect and restore coastal waters and thus to enhance the long-term productivity of all coastal resources. The NOAA/EPA review of the Ohio program and preparation of this environmental assessment have not indicated that the Ohio program includes any short-term uses of the environment which would degrade long-term productivity. Some short-term uses of the environment may have to be modified in response to implementation of management measures. This may result in short-term costs to the users, but will result in long-term benefits to the environment through cleaner coastal waters, protected resources, and increased productivity.

4.F IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

NOAA does not anticipate any irreversible or irretrievable commitment of resources as a result of the approval of the Ohio coastal nonpoint program. However, the section 6217 requirements for states and territories to establish a 6217 management area, to implement management measures in this area, and to identify and map critical coastal areas that need additional measures to protect them against present and future nonpoint pollution problems, may have the effect of reallocating resources for an indefinite period of time. The identification of critical areas may also have the effect of restricting development or other activities in the critical areas and concentrating these activities in other locations. Although development activity results in the affected site being committed to the new use for an indefinite period of time, and can practically be considered an irretrievable commitment of resources, the amount of resources is expected to be minimal. Also, although critical areas may need special controls such as setbacks and low density zoning to protect coastal waters, these designations may change in the future.

5. **LIST OF PREPARERS**

Joseph P. Flanagan - Environmental Protection Specialist, Coastal Programs Division in the Office of Ocean and Coastal Resource Management, had lead responsibility for the preparation of the Ohio environmental assessment. He has been involved in the preparation of environmental impact statements and assessments since 1980 in NOAA's Ocean Minerals and Energy Division, Marine Sanctuaries Division, and Coastal Programs Division. He has a B.S. in Geology/Chemistry from the University of Miami and an M.S. in Environmental Systems Management from The American University.

6. **LIST OF AGENCIES AND PERSONS CONSULTED**

The following Federal and Ohio agencies were consulted during the preparation of the environmental assessment and during the review of the Ohio coastal nonpoint program. These agencies also received a copy of the environmental assessment.

Federal Agencies

Department of Commerce
  National Marine Fisheries Service
  National Ocean Service
Department of the Interior
  U.S. Fish and Wildlife Service
Environmental Protection Agency
  Office of Wetlands, Oceans and Watersheds
  Region V - Nonpoint Source Coordinator

Ohio Agencies

Ohio Department of Natural Resources
Ohio Environmental Protection Agency

7. **FINDING OF NO SIGNIFICANT ENVIRONMENTAL IMPACT**

Having reviewed the environmental assessment and the available information relating to the proposed action, I have determined that there will be no significant adverse environmental impacts resulting from the action different from those analyzed in the Programmatic Environmental Impact Statement prepared for the 6217 program. Preparation of an environmental impact statement on the action is not required by Section 102 (2) (c) of the National Environmental Policy Act or its implementing regulations.

_____ _____

Acting Assistant Administrator for Ocean Services and Coastal Zone Management, NOAA — Date

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9. APPENDIX A. MANAGEMENT MEASURES FOR SOURCES OF NONPOINT POLLUTION IN COASTAL WATERS

1. Management Measures for Agricultural Sources

1. ***Erosion and Sediment Control Management Measure***

Apply the erosion component of a Conservation Management System (CMS) as defined in the Field Office Technical Guide of the U.S. Department of Agriculture Natural Resources Conservation Service to minimize the delivery of sediment from agricultural lands to surface waters, or

Design and install a combination of management and physical practices to settle the settleable solids and associated pollutants in runoff delivery from the contributing area for storms of up to and including a 10-year, 24-hour frequency.

2a. ***Management Measure for Facility Wastewater and Runoff from Confined Animal Facility Management (Large Units)***.

Limit the discharge from the confined animal facility to surface waters by:
(1) Storing both the facility wastewater and the runoff from confined animal facilities that is caused by storms up to and including a 25-year, 24-hour frequency storm. Storage structures should:
(a) Have an earthen lining or plastic membrane lining, or
(b) Be constructed with concrete, or
(c) Be a storage tank; and
(2) Managing stored runoff and accumulated solids from the facility through an appropriate waste utilization system.

This management measure is intended to be applied to all new facilities regardless of size and to all new or existing confined animal facilities that contain the following number of head or more:

	Head	Animal Units
Beef Feedlots	300	300
Stables (horses)	200	400
Dairies	70	98
Layers	15,000	150[1]
		495[2]
Broilers	15,000	150[1]
		495[2]
Turkeys	13,750	2,475
Swine	200	80

This measure does not apply to those facilities that are defined as concentrated animal feeding operations by Federal regulation 40 CFR 122 and are required to obtain NPDES discharge permits. This regulation allows the Director of a NPDES discharge program to designate any animal feeding operation as a concentrated animal feeding operation (thus subjecting the operation to NPDES program requirements) upon determining that it is a significant contributor of pollution. If an NPDES permit is issued, the terms of the permit

apply and this management measure is not required.

A confined animal facility is a lot or facility (other than an aquatic animal production facility) where the following conditions are met:

- Animals (other than aquatic animals) have been, are, or will be stabled or confined and fed or maintained for a total of 45 days or more in any 12-month period, and
- Crops, vegetation forage growth, or post-harvest residues are not sustained in the normal growing season over any portion of the lot or facility.

2b. ***Management Measure for Facility Wastewater and Runoff from Confined Animal Facility Management (Small Units)***

Design and implement systems that collect solids, reduce contaminant concentrations, and reduce runoff to minimize the discharge of contaminants in both facility wastewater and in runoff that is caused by storms up to and including a 25-year, 24-hour frequency storm. Implement these systems to substantially reduce significant increases in pollutant loadings to ground water. Manage stored runoff and accumulated solids from the facility through an appropriate waste utilization system.

This management measure is intended to be applied to all existing confined animal facilities that contain the following number of head:

	Head	Animal Units
Beef Feedlots	50-299	50-299 1b
Stables (horses)	100-199	200-399
Dairies	20-69	28-97
Layers	5000-14,999	50-149[3]
		165-494[4]
Broilers	5,000-14,999	50-149[3]
		165-494[4]
Turkeys	5,000-13,749	900-2,474
Swine	100-199	40-79

[3] If facility has a liquid manure system, as used in 40 CFR Section 122, App.B.
[4] If facility has continuous overflow watering, as used in 40 CFR Section 122, App.B.

This measure is subject to the same NPDES designation criteria mentioned for large unit animal facilities. Facilities containing fewer than the number of head listed above are not subject to this management measure. Existing facilities that meet the requirements of management measures for large units are in compliance with the requirements of this measure. Existing and new facilities that already minimize the discharge of contaminants to surface waters, protect against contamination of ground water, and have an appropriate waste utilization system may already meet the requirements of this measure. Such facilities may not need additional controls for the purposes of this measure.

3. ***Nutrient Management Measure***

Develop, implement, and periodically update a nutrient management plan to: (1) apply nutrients at rates necessary to achieve realistic crop yields, (2) improve the timing of nutrient application, and (3) use agronomic crop production technology to increase nutrient use efficiency. When the source of the nutrients is other than commercial fertilizer, determine the nutrient value and the rate of availability of the nutrients. Determine and credit the nitrogen contribution of any legume crop. Soil and plant tissue testing should be used routinely.

Nutrient management plans contain the following core components:

(1) Farm and field maps showing acreage, crops, soils, and waterbodies.

(2) Realistic yield expectations for the crop(s) to be grown, based primarily on the producer's actual yield history, State Land Grant University yield expectations for the soil series, or SCS Soils-5 information for the soil series.

(3) A summary of the nutrient resources available to the producer, which at a minimum include:

- *Soil test results for pH, phosphorus, nitrogen, and potassium;*
- *Nutrient analysis of manure, sludge, mortality compost or effluent;*
- *Nitrogen contributions to the soil from legumes grown in the rotation;*
- *Other significant nutrient sources (e.g., irrigation water).*

(4) An evaluation of field limitations based on environmental hazards or concerns, such as,

- *Sinkholes, shallow soils over fractured bedrock, and soils with high leaching potential,*
- *Lands near surface water,*
- *Highly erodible soils, and,*
- *Shallow aquifers.*

(5) Use of the limiting nutrient concept to establish the mix of nutrient sources and requirements for the crop based on a realistic yield expectation.

(6) Identification of timing and application methods for nutrients to: provide nutrients at rates necessary to achieve realistic crop yields; reduce losses to the environment; and avoid applications as much as possible to frozen soil and during periods of leaching and runoff.

(7) Provisions for the proper calibration and operation of nutrient application equipment.

4.***Pesticide Management Measure***

To reduce contamination of surface water and ground water from pesticides:
(1) Evaluate the pest problems, previous pest control measures, and cropping history;
(2) Evaluate the soil and physical characteristics of the site including mixing, loading, and storage areas for potential leaching or runoff of pesticides. If leaching or runoff is found to occur, steps should be taken to prevent further contamination;
(3) Use integrated pest management (IPM) strategies that:

- *(a) Apply pesticides only when an economic benefit to the producer will be achieved (i.e., applications based on economic thresholds); and*
- *(b) Apply pesticides efficiently and at times when runoff are unlikely;*

(4) When pesticide applications are necessary and a choice of registered materials exists, consider the persistence, toxicity, runoff potential, and leaching potential of products in making a selection;
(5) Periodically calibrate pesticide spray equipment; and
(6) Use anti-backflow devices on hoses used for filling tank mixtures.

5. ***Grazing Management Measure***

Protect range, pasture and other grazing lands:
(1) By implementing one or more of the following to protect sensitive areas (such as streambanks, wetlands, estuaries, ponds, lake shores, and riparian zones):

- *(a) Exclude livestock,*
- *(b) Provide stream crossings or hardened watering access for drinking,*
- *(c) Provide alternative drinking water locations,*
- *(d) Locate salt and additional shade, if needed, away from sensitive areas, or*

(e) Use improved grazing management (e.g., herding) to reduce the physical disturbance and reduce direct loading of animal waste and sediment caused by livestock; and

(2) By achieving either of the following on all range, pasture, and other grazing lands not addressed under (1):

(a) Implement the range and pasture components of a Conservation Management System (CMS) as defined in the Field Office Technical Guide of the USDA-SCS by applying the progressive planning approach of the USDA Soil Conservation Service (SCS) to reduce erosion, or

(b) Maintain range, pasture, and other grazing lands in accordance with activity plans established by either the Bureau of Land Management of the U.S. Department of the Interior or the Forest Service of the USDA.

6. ***Irrigation Water Management***

To reduce nonpoint source pollution of surface waters caused by irrigation:
(1) Operate the irrigation system so that the timing and amount of irrigation water applied match crop water needs. This will require, as a minimum: (a) the accurate measurement of soil-water depletion volume and the volume of irrigation water applied, and (b) uniform application of water.
(2) When chemigation is used, include backflow preventers for wells, minimize the harmful amounts of chemigated waters that discharge from the edge of the field, and control deep percolation. In cases where chemigation is performed with furrow irrigation systems, a tailwater management system may be needed.

The following limitations and special considerations apply:
(1) In some locations, irrigation return flows are subject to other water rights or are required to maintain stream flow. In these special cases, on-site reuse could be precluded and would not be considered part of the management measure for such locations.
(2) By increasing the water use efficiency, the discharge volume from the system will usually be reduced. While the total pollutant load may be reduced somewhat, there is the potential for an increase in the concentration of pollutants in the discharge. In these special cases, where living resources or human health may be adversely affected and where other management measures (nutrients and pesticides) do not reduce concentrations in the discharge, increasing water use efficiency would not be considered part of the management measure.
(3) In some irrigation districts, the time interval between the order for and the delivery of irrigation water to the farm may limit the irrigator's ability to achieve the maximum on-farm application efficiencies that are otherwise possible.
(4) In some locations, leaching is necessary to control salt in the soil profile. Leaching for salt control should be limited to the leaching requirement for the root zone.
(5) Where leakage from delivery systems or return flows supports wetlands or wildlife refuges, it may be preferable to modify the system to achieve a high level of efficiency and then divert the "saved water" to the wetland or wildlife refuge. This will improve the quality of water delivered to wetlands or wildlife refuges by preventing the introduction of pollutants from irrigated lands to such diverted water.
(6) In some locations, sprinkler irrigation is used for frost or freeze protection, or for crop cooling. In these special cases, applications should be limited to the amount necessary for crop protection, and applied water should remain on-site.

2. Management Measures for Urban Areas

1. ***New Development Management Measure***

(1) By design or performance:
(a) After construction has been completed and the site is permanently stabilized, reduce the average annual total suspended solid (TSS) loadings by 80 percent. For the purposes of this measure, an 80 percent TSS reduction is to be determined on an average annual basis, or*

(b) Reduce the postdevelopment loadings of TSS so that the average annual TSS loadings are no greater than predevelopment loadings, and

(2) To the extent practicable, maintain postdevelopment peak runoff rate and average volume at levels that are similar to predevelopment levels.

Sound watershed management requires that both structural and nonstructural measures be employed to mitigate the adverse impacts of storm water. Nonstructural Management Measures 11.B and 11.C can be effectively used in conjunction with Management Measure 11.A to reduce both the short-and long-term costs of meeting the treatment goals of this management measure.

** Based on the average annual TSS loadings from all storms less than or equal to the 2-year/ 24 hour storm. TSS loadings from storms greater that the 2-year/24 hour storm are not expected to be included in the calculation of the average annual TSS loadings.*

2. ***Watershed Protection Management Measure***

Develop a watershed protection program to:
(1) Avoid conversion, to the extent practicable, of areas that are particularly susceptible to erosion and sediment loss;

(2) Preserve areas that provide important water quality benefits and/or are necessary to maintain riparian and aquatic biota; and

(3) Site development, including roads, highways, and bridges, to protect to the extent practicable the natural integrity of waterbodies and natural drainage systems

3. ***Site Development Management Measure***

Plan, design, and develop sites to:
(1) Protect areas that provide important water quality benefits and/or are particularly susceptible to erosion and sediment loss;

(2) Limit increases of impervious areas, except where necessary;

(3) Limit land disturbance activities such as clearing and grading, and cut and fill to reduce erosion and sediment loss; and

(4) Limit disturbance of natural drainage features and vegetation.

4. ***Construction Site Erosion and Sediment Control Management Measure***

(1) Reduce erosion and, to the extent practicable, retain sediment onsite during and after construction, and

(2) Prior to land disturbance, prepare and implement an approved erosion and sediment

control plan or similar administrative document that contains erosion and sediment control provisions.

5. ***Construction Site Chemical Control Management Measure***

(1) Limit application, generation, and migration of toxic substances;

(2) Ensure the proper storage and disposal of toxic materials; and

(3) *Apply nutrients at rates necessary to establish and maintain vegetation without causing significant nutrient runoff to surface waters.*

6. ***Existing Development Management Measure***

Develop and implement watershed management programs to reduce runoff pollutant concentrations and volumes from existing development:

(1) Identify priority local and/or regional watershed pollutant reduction opportunities, e.g., improvements to existing urban runoff control structures;

(2) Contain a schedule for implementing appropriate controls;

(3) Limit destruction of natural conveyance systems; and

(4) Where appropriate, preserve, enhance, or establish buffers along surface waterbodies and their tributaries.

7. ***New Onsite Disposal Systems Management Measures***

(1) Ensure that new Onsite Disposal Systems (OSDS) are located, designed, installed, operated, inspected, and maintained to prevent the discharge of pollutants to the surface of the ground and to the extent practicable reduce the discharge of pollutants into ground waters that are closely hydrologically connected to surface waters. Where necessary to meet these objectives: (a) discourage the installation of garbage disposals to reduce hydraulic and nutrient loadings; and (b) where low-volume plumbing fixtures have not been installed in new developments or redevelopments, reduce total hydraulic loadings to the OSDS by 25 percent. Implement OSDS inspection schedules for preconstruction, construction, and postconstruction.

(2) Direct placement of OSDS away from unsuitable areas. Where OSDS placement in unsuitable areas is not practicable, ensure that the OSDS is designed or sited at a density so as not to adversely affect surface waters or ground water that is closely hydrologically connected to surface water. Unsuitable areas include, but are not limited to, areas with poorly or excessively drained soils; areas with shallow water tables or areas with high seasonal water tables; areas overlaying fractured bedrock that drain directly to ground water; areas with floodplains; or areas where nutrient and/or pathogen concentrations in the effluent cannot be sufficiently treated or reduced before the effluent reaches sensitive waterbodies;

(3) Establish protective setbacks from surface waters, wetlands, and floodplains for conventional as well as alternative OSDS. The lateral setbacks should be based on soil type, slope, hydrologic factors, and type of OSDS. Where uniform protective setbacks cannot be achieved, site development with OSDS so as not to adversely affect waterbodies and/or contribute to a public health nuisance.

(4) Establish protective separation distances between OSDS system components and groundwater which is closely hydrologically connected to surface waters. The separation distances should be based on soil type, distance to ground water, hydrologic factors, and type of OSDS;

(5) Where conditions indicate that nitrogen-limited surface waters may be adversely affected by excess nitrogen loadings from ground water, require the installation of OSDS that reduce total nitrogen loadings by 50 percent to ground water that is closely hydrologically connected to surface water.

8. ***Operating Onsite Disposal Systems Management Measure***

(1) Establish and implement policies and systems to ensure that existing OSDS are operated and maintained to prevent the discharge of pollutants to the surface of the ground and to the extent practicable reduce the discharge of pollutants into ground waters that are closely hydrologically connected to surface waters. Where necessary to meet these objectives, encourage the reduced use of garbage disposals, encourage the use of low-volume plumbing fixtures, and reduce total phosphorus loadings to the OSDS by 15 percent (if the use of low-level phosphate detergents has not been required or widely adopted by OSDS users). Establish and implement policies that require an OSDS to be repaired, replaced, or modified where the OSDS fails, or threatens or impairs surface waters;

(2) Inspect OSDS at a frequency adequate to ascertain whether OSDS are failing:

(3) Consider replacing or upgrading OSDS to treat influent so that total nitrogen loadings in the effluent are reduced by 50 percent. This provision applies only:

(a) where conditions indicate that nitrogen-limited surface waters may be adversely affected by significant ground water nitrogen loadings from OSDS;
(b) where nitrogen loadings from OSDS are delivered to ground water that is closely hydrologically connected to surface water.

9. ***Pollution Prevention Management Measure***

Implement pollution prevention and education programs to reduce nonpoint source pollutants generated from the following activities, where applicable:
o The improper storage, use and disposal of household hazardous chemicals, including automobile fluids, pesticides, paints, solvents, etc.,
o Lawn and garden activities, including the application and disposal of lawn and garden care products, and the improper disposal of leaves and yard trimmings;
o Turf management on golf courses, parks, and recreational areas;
o Improper operation and maintenance of onsite disposal systems;
o Discharge of pollutants into storm drains including floatables, waste oil, and litter;
o Commercial activities including parking lots, gas stations, and other entities not under NPDES purview; and
o Improper disposal of pet excrement.

10. ***Management Measure for Planning, Siting, and Developing Roads and Highways***

Plan, site, and develop roads and highways to:
(1) Protect areas that provide important water quality benefits or are particularly susceptible to erosion or sediment loss; and

(2) Limit land disturbance such as clearing and grading and cut and fill to reduce erosion and sediment loss; and

(3) Limit disturbance of natural drainage features and vegetation.

11. ***Management Measure for Bridges***

Site, design, and maintain bridge structures so that sensitive and valuable aquatic ecosystems and areas providing important water quality benefits are protected from adverse effects.

12. ***Management Measure for Construction Projects***

(1) Reduce erosion and, to the extent practicable, retain sediment onsite during and after construction and;

(2) Prior to land disturbance, prepare and implement an approved erosion control plan or similar administrative document that contains erosion and sediment control provisions.

13. ***Management Measure for Construction Site Chemical Control***

(1) Limit the application, generation, and migration of toxic substances;

(2) Ensure the proper storage and disposal of toxic materials; and

(3) Apply nutrients at rates necessary to establish and maintain vegetation without causing significant nutrient runoff to surface water. .

14. ***Management Measure for Operation and Maintenance***

Incorporate pollution prevention procedures into the operation and maintenance of roads, highways, and bridges to reduce pollutant loadings to surface waters.

15. ***Management Measure for Road, Highway, and Bridge Runoff Systems***

Develop and implement runoff management systems for existing roads, highways, and bridges to reduce runoff pollutant concentrations and volumes entering surface waters.

(1) Identify priority and watershed pollutant reduction opportunities (e.g., improvements to existing urban runoff control structures; and

(2) Establish schedules for implementing appropriate controls.

3. Management Measures for Forestry

1. ***Preharvest Planning***

Perform advance planning for forest harvesting that includes the following elements where appropriate:

(1) Identify the area to be harvested including location of waterbodies and sensitive areas such as wetlands, threatened or endangered aquatic species habitat areas, or high-erosion-hazard areas (landslide-prone areas) within the harvest unit.
(2) Time the activity for the season or moisture conditions when the least impact occurs.
(3) Consider potential water quality impacts and erosion and sedimentation control in the selection of silvicultural and regeneration systems, especially for harvesting and site preparation.
(4) Reduce the risk of occurrence of landslides and severe erosion by identifying high-erosion-hazard areas and avoiding harvesting in such areas to the extent practicable.

(5) Consider additional contributions from harvesting or roads to any known existing water quality impairments or problems in watersheds of concern.

Perform advance planning for forest road systems that includes the following elements where appropriate:

(1) Locate and design road systems to minimize, to the extent practicable, potential sediment generation and delivery to surface waters. Key components are:
- *o locate roads, landings, and skid trails to avoid to the extent practicable steep grades and steep hillslope areas, and to decrease the number of stream crossings;*
- *o avoid to the extent practicable locating new roads and landings in Streamside Management Areas (SMAs); and*
- *o determine road usage and select the appropriate road standard.*

(2) Locate and design temporary and permanent stream crossings to prevent failure and control impacts from the road system. Key components are:
- *o size and site crossing structures to prevent failure;*
- *o for fish-bearing streams, design crossings to facilitate fish passage.*

(3) Ensure that the design of road prism and the road surface drainage are appropriate to the terrain and that road surface design is consistent with the road drainage structures.

(4) Use suitable materials to surface roads planned for all-weather use to support truck traffic.

(5) Design road systems to avoid high erosion or landslide hazard areas. Identify these areas and consult a qualified specialist for design of any roads that must be constructed through these areas.

Each state should develop a process (or utilize an existing process) that ensures that the management measures in the chapter are implemented. Such a process should include appropriate notification, compliance audits, or other mechanisms for forestry activities with the potential for significant adverse nonpoint effects based on the type and size of operation and the presence of stream crossings or SMAs. .

2. ***Streamside Management Areas (SMAs)***

Establish and maintain a streamside management area along surface waters, which is sufficiently wide and which includes a sufficient number of canopy species to buffer against detrimental changes in the temperature regime of the waterbody, to provide bank stability, and to withstand wind damage. Manage the SMA in such a way as to protect against soil disturbance in the SMA and delivery to the stream of sediments and nutrients generated by forestry activities, including harvesting. Manage the SMA canopy species to provide a sustainable source of large woody debris needed for instream channel structure and aquatic species habitat.

3. ***Road Construction/Reconstruction***

(1) Follow preharvest planning (as described under Management Measure 1) when constructing or reconstructing the roadway.

(2) Follow designs planned under Management Measure 1 for road surfacing and shaping.

(3) Install road drainage structures according to designs planned under Management Measure 1 and regional storm return period and installation specifications. Match these drainage structures with terrain features and with road surface and prism designs.

(4) Guard against the production of sediment when installing stream crossings.

(5) Protect surface waters from slash and debris material from roadway clearing.

(6) Use straw bales, silt fences, mulching, or other favorable practices on disturbed soils on unstable cuts, fills, etc.

(7) Avoid constructing new roads in SMAs to the extent practicable.

4. ***Road Management***

(1) Avoid using roads where possible for timber hauling or heavy traffic during wet or thaw periods on roads not designed and constructed for these conditions.

(2) Evaluate the future need for a road and close roads that will not be needed. Leave closed roads and drainage channels in a stable condition to withstand storms.

(3) Remove drainage crossings and culverts if there is a reasonable risk of plugging or failure from lack of maintenance.

(4) Following completion of harvesting, close and stabilize temporary spur roads and seasonal roads to control and direct water away from the roadway. Remove all temporary stream crossings.

(5) Inspect roads to determine the need for structural maintenance. Conduct maintenance practices, when conditions warrant, including cleaning and replacement of deteriorated structures and erosion controls, grading or seeding of road surfaces, and, in extreme cases, slope stabilization or removal of road fills where necessary to maintain structural integrity.

(6) Conduct maintenance activities, such as dust abatement, so that chemical contaminants or pollutants are not introduced into surface waters to the extent practicable.

(7) Properly maintain permanent stream crossings and associated fills and approaches to reduce the likelihood (a) that stream overflow will divert onto roads, and (b) that fill erosion will occur if the drainage structures become obstructed.

5. ***Timber Harvesting***

The timber harvesting management measure consists of implementing the following:
(1) Timber harvesting operations with skid trails or cable yarding follow layouts determined under Management Measure 1.

(2) Install landing drainage structures to avoid sedimentation to the extent practicable. Disperse landing drainage over sideslopes.

(3) Construct landings away from steep slopes and reduce the likelihood of fill slope failures. Protect landing surfaces used during wet periods. Locate landings outside of SMAs.

(4) Protect stream channels and significant ephemeral drainages from logging debris and slash material.

(5) Use appropriate areas for petroleum storage, draining, dispensing. Establish procedures to contain and treat spills. Recycle or properly dispose of all waste materials.

For cable yarding:
(1) Limit yarding corridor gouge or soil plowing by properly locating cable yarding landings.
(2) Locate corridors for SMAs following Management Measure 2.

For groundskidding:
(1) Within SMAs, operate groundskidding equipment only at stream crossings to the extent practicable. In SMAs, fell and endline trees to avoid sedimentation.

(2) Use improved stream crossings for skid trails which cross flowing drainages. Construct skid trails to disperse runoff and with adequate drainage structures.

(3) On steep slopes, use cable systems rather than groundskidding where ground-skidding may cause excessive sedimentation.

6. ***Site Preparation and Forest Regeneration***

Confine on-site potential NPS pollution and erosion resulting from site preparation and the regeneration of forest stands. The components of the management measure for site preparation and regeneration are:

(1) Select a method of site preparation and regeneration suitable for the site conditions.

(2) Conduct mechanical tree planting and ground-disturbing site preparation activities on the contour of sloping terrain.

(3) Do not conduct mechanical site preparation and mechanical tree planting in streamside management areas.

(4) Protect surface waters from logging debris and slash material.

(5) Suspend operations during wet periods if equipment used begins to cause excessive soil disturbance that will increase erosion.

(6) Locate windrows at a safe distance from drainages and SMAs to control movement of the material during high runoff conditions.

(7) Conduct bedding operations in high-water-table areas during dry periods of the year. Conduct bedding in sloping areas on the contour.

(8) Protect small ephemeral drainages when conducting mechanical tree planting.

7. ***Fire Management***

Prescribe fire for site preparation and control or suppress wildfire in a manner which reduces potential nonpoint source pollution of surface waters:

(1) Intense prescribed fire should not cause excessive sedimentation due to the combined effect of removal of canopy species and the loss of soil-binding ability of subcanopy and herbaceous vegetation roots, especially in SMAs, in streamside vegetation for small ephemeral drainages, or on very steep slopes.

(2) Prescriptions for prescribed fire should protect against excessive erosion or sedimentation to the extent practicable.

(3) All bladed firelines, for prescribed fire and wildfire, should be plowed on contour or stabilized with water bars and/or other appropriate techniques if needed to control excessive sedimentation or erosion of the fireline.

(4) Wildfire suppression and rehabilitation should consider possible NPS pollution of watercourses, while recognizing the safety and operational priorities of fighting wildfires.

8. ***Revegetation of Disturbed Areas***

Reduce erosion and sedimentation by rapid vegetation of areas disturbed by harvesting operations or road construction:

(1) Revegetate disturbed areas (using seeding or planting) promptly after completion of the earth-disturbing activity. Local growing conditions will dictate the timing for establishment of vegetative cover.

(2) Use mixes of species and treatments developed and tailored for successful vegetation establishment for the region or area.

(3) Concentrate revegetation efforts initially on priority areas such as disturbed areas in SMAs or the steepest areas of disturbance near drainages.

9. ***Forest Chemical Management***

Use chemicals when necessary for forest management in accordance with the following to reduce nonpoint source pollution impacts due to the movement of forest chemicals off-site during and after application:

(1) Conduct applications by skilled and, where required, licensed applicators according to the registered use, with special consideration given to impacts to nearby surface waters.

(2) Carefully prescribe the type and amount of pesticides appropriate for the insect, fungus, or herbaceous species.

(3) Prior to applications of pesticides and fertilizers, inspect the mixing and loading process and the calibration of equipment, and identify the appropriate weather conditions, the spray area, and buffer areas for surface waters.

(4) Establish and identify buffer areas for surface waters. (This is especially important for aerial applications.)

(5) Immediately report accidental spills of pesticides or fertilizers into surface waters to the appropriate State agency. Develop an effective spill contingency plan to contain spills.

10. ***Wetlands Forest***

Plan, operate, and manage normal, ongoing forestry activities (including harvesting, road design and construction, site preparation and regeneration, and chemical management) to adequately protect the aquatic functions of forested wetlands.

4. Management Measures for Marinas and Recreational Boating

Siting and Design

1. ***Marina Flushing Management Measure***

Site and design marinas such that tides and/or currents will aid in flushing of the site or renew its water regularly.

2. ***Water Quality Assessment Management Measure***

Assess water quality as part of marina siting and design.

3. ***Habitat Assessment Management Measure***

Site and design marinas to protect against adverse effects on shellfish resources, wetlands, submerged aquatic vegetation, or other important riparian and aquatic habitat areas as designated by local, State, or Federal governments.

4. ***Shoreline Stabilization Management Measure***

Where shoreline erosion is a nonpoint source pollution problem, shorelines should be stabilized. Vegetated methods are strongly preferred unless structural methods are more cost effective, considering the severity of wave and wind erosion, offshore bathymetry, and the potential adverse impact on other shorelines and offshore areas

5. ***Storm Water Runoff Management Measure***

Implement effective runoff control strategies which include the use of pollution prevention activities and the proper design of hull maintenance areas. Reduce the average annual loadings of total suspended solids (TSS) in runoff from hull maintenance areas by 80 percent. For the purposes of this measure, an 80 percent reduction of TSS is to be determined on an average annual basis.

6. ***Fueling Station Design Management Measure***

Design fueling stations to allow for ease in cleanup of spills.

7. ***Sewage Facility Management Measure***

Install pumpout, dump station, and restroom facilities where needed at new and expanding marinas to reduce the release of sewage to surface waters. Design these facilities to allow ease of access and post signage to promote use by the boating public.

Operation and Maintenance

1. ***Solid Waste Management Measure***

Properly dispose of solid wastes produced by the operation, cleaning, maintenance, and repair of boats to limit entry of solid wastes to surface waters.

2. ***Fish Waste Management Measure***

Promote sound fish waste management through a combination of fish-cleaning restrictions, public education, and proper disposal of fish waste.

3. ***Liquid Material Management Measure***

Provide and maintain appropriate storage, transfer, containment, and disposal facilities for liquid material, such as oil, harmful solvents, antifreeze, and paints, and encourage recycling of these materials.

4. ***Petroleum Control Management Measure***

Reduce the amount of fuel and oil from boat bilges and fuel tank air vents entering marina and surface waters.

5. ***Boat Cleaning Management Measure***

For boats that are in the water, perform cleaning operations to minimize, to the extent practicable, the release to surface waters of (a) harmful cleaners and solvents and (b) paint from in-water hull cleaning.

6. ***Public Education Management Measure***

Public education/outreach/training programs should be instituted for boaters, as well as marina owners and operators, to prevent improper disposal of polluting material.

7. ***Maintenance of Sewage Facilities Management Measure***

Ensure that sewage pumpout facilities are maintained in operational condition and encourage their use.

8. Boat Operation Management Measure (applies to boating only)

Restrict boating activities where necessary to decrease turbidity and physical destruction of shallow-water habitat.

5. Management Measures for Hydromodification

Channelization and Channel Modification

1. ***Management Measure for Physical and Chemical Characteristics of Surface Waters***

(1) Evaluate the potential effects of proposed channelization and channel modification on the physical and chemical characteristics of surface waters in coastal areas;

(2) Plan and design channelization and channel modification to reduce undesirable impacts; and

(3) Develop an operation and maintenance program for existing modified channels that includes identification and implementation of opportunities to improve physical and chemical characteristics of surface waters in those channels.

2. ***Instream and Riparian Habitat Restoration Management Measure***

(1) Evaluate the potential effects of proposed channelization and channel modification on instream and riparian habitat in coastal areas;

(2) Plan and design channelization and channel modification to reduce undesirable impacts; and

(3) Develop an operation and maintenance program with specific timetables for existing modified channels that includes identification of opportunities to restore instream and riparian habitat in those channels.

Dams

1. ***Management Measure for Erosion and Sediment Control***

(1) Reduce erosion and, to the extent practicable, retain sediment onsite during and after construction, and

(2) Prior to land disturbance, prepare and implement an approved erosion and sediment control plan or similar administrative document that contains erosion and sediment control provisions.

2. ***Management Measure for Chemical and Pollutant Control***

(1) Limit application, generation, and migration of toxic substances;

(2) Ensure the proper storage and disposal of toxic materials; and,

(3) Apply nutrients at rates necessary to establish and maintain vegetation without causing significant nutrient runoff to surface waters.

3. ***Management Measure for Protection of Surface Water Quality and Instream and Riparian Habitat***

Develop and implement a program to manage the operation of dams in coastal areas that includes an assessment of:
(1) Surface water quality and instream and riparian habitat and potential for improvement and

(2) Significant nonpoint source pollution problems that result from excessive surface water withdrawals.

Streambank and Shoreline Erosion

Streambank and Shoreline Erosion

1. ***Management Measure for Eroding Streambanks and Shorelines***

(1) Where streambank or shoreline erosion is a nonpoint source pollution problem, streambanks and shorelines should be stabilized. Vegetative methods are strongly preferred unless structural methods are more cost-effective, considering the severity of wave and wind erosion, offshore bathymetry, and the potential adverse impact on other streambanks, shorelines, and offshore areas.

(2) Protect streambank and shoreline features with the potential to reduce NPS pollution.

(3) Protect streambanks and shorelines from erosion due to uses of either the shorelands or adjacent surface waters.

6. Management Measures for Wetlands, Riparian Areas and Vegetated Treatment Systems

1. ***Management Measure for Protection of Wetlands and Riparian Areas***

Protect from adverse effects wetlands and riparian areas that are serving a significant NPS abatement function and maintain this function while protecting the other existing functions of these wetlands and riparian areas as measured by characteristics such as vegetative composition and cover, hydrology of surface water and ground water, geochemistry of the substrate, and species composition.

2. ***Management Measure for Restoration of Wetland and Riparian Areas***

Promote the restoration of the preexisting functions in damaged and destroyed wetlands and riparian systems in areas where the systems will serve a significant NPS pollution abatement function.

3. ***Management Measure for Vegetated Treatment Systems***

Promote the use of engineered vegetated treatment systems such as constructed wetlands or vegetated filter strips where these systems will serve a significant NPS pollution abatement function.